

# THE IRON AGE

THURSDAY, MAY 7, 1891.

## The Shipman Pumping Outfit.

A compact pumping outfit has been brought out by the Shipman Engine Company of Boston, Mass., consisting of a boiler and a pump on one base. The arrangement is clearly shown in the accompanying illustration. The supply of fuel is automatically controlled by a diaphragm which can be set at any given pressure, and the latter then varies but a few pounds either way. The water supply is also automatically controlled by a ball float in float chamber connected direct with a cut-off valve in the pipe leading from the feed

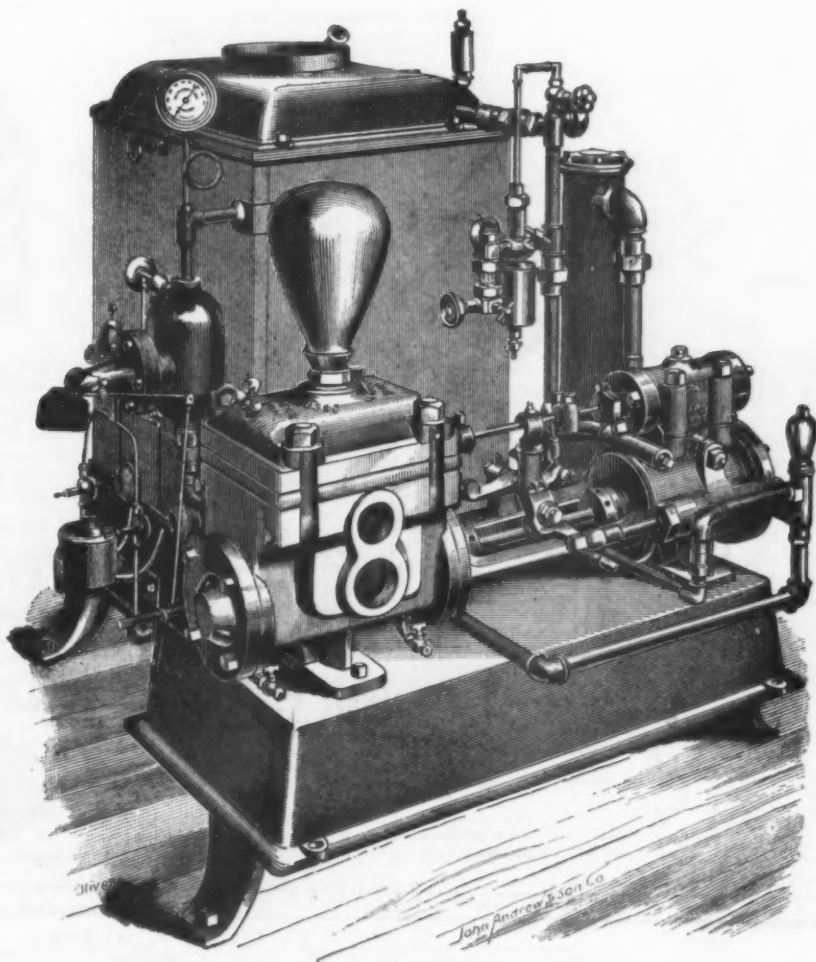
purposes. It does not require a skilled mechanic to set up or operate it.

The boiler has been tested to 400 pounds pressure per square inch. The makers give the approximate capacity per gallon per hour for three sizes, and the approximate cost of fuel per hour. In making these estimates they have included only the tank or medium service pumps.

	Gals. per hour.	Cents.
No. 1 pump $3\frac{1}{4} \times 3\frac{1}{4} \times 4$ .....	1050	$3\frac{1}{2}$
No. 2 pump, $4 \times 4 \times 5$ .....	2200	7
No. 4 pump, $5 \times 4 \times 7$ .....	3000	10

These capacities are calculated at an or-

and those in dock, are considered. In arranging how this could be done it was found necessary to design heavy floating derricks for vessels afloat, and to facilitate the placing of plates upon the vessels when on dock portable cranes were devised. Strong trucks for the carriage of the plates were also designed. As no bolt holes are allowed in the plates in most instances until the plates are in position, a difficulty arose as to what means could be secured for controlling such masses of metal. This demanded that new appliances be provided to suit the occasion. For boring the holes through the steel backing and also into the



THE SHIPMAN PUMPING OUTFIT.

pump to the boiler. The feed pump is attached direct to the piston rod of large pump. This arrangement of fuel and water supply leaves nothing for the operator to do, beyond the opening and closing of the throttle valve, when it is necessary to start or stop the pump, there being no small petcocks or valves to adjust.

The economy of room is a very important feature, the plant we illustrate having a floor space, inclusive of legs, of only 38 x 39 inches. This is no more than is ordinarily occupied by the average small power engine commonly used for pumping purposes. The outfit is designed to meet the demand for a compact and inexpensive pump for supplying water to hotels, residences, public buildings, dairies and farm uses, tanneries, breweries, and is particularly desirable for railroad watering stations, as well as for irrigating

dinary speed for pump and delivering water at an average height of 50 to 75 feet.

The board ordered by the Secretary of the Navy some time ago to devise the best method of fitting the armor to naval vessels, consisting of Naval Constructor Philip Hichborn as president, Naval Constructor J. J. Woodward and Prof. P. R. Alger, has made its report, covering the whole subject. Some of the points of primary importance are the adoption of a standard in the bolts to be used in the securing of armor. These bolts are of a peculiar construction, designed to resist shock most efficiently. The threaded part, which screws into the armor, is of an entirely new design. The best modes of handling the armor plates in placing them on the ship's side, both for vessels afloat

steel armor plates the board recommends the use of electricity as combining the most favorable possibilities for this work. The report is voluminous and contains many drawings and tables of reference, and it is a series of improvements upon everything of a like nature heretofore devised by other Governments in meeting the same questions.

The Venezuela Government has placed an order with E. T. Copeland & Co. for four revenue cutters or gunboats. Two of the same are to be 75 feet long and 14 feet beam, and two are to be 65 feet long and 12 feet beam. They are to be equipped with triple-expansion engines and Worthington water-tube boilers. The vessels are to be schooner-rigged and will be handsome and fast.

## Casting in Bronze.

Before the time of written history the fact that bronze was peculiarly adapted to the reproduction of sculpture had been discovered. Its extreme fluidity when molten, its hardness and resistance to oxidation and its property of acquiring a fine patina on long exposure combined to extend its use in the early ages. Some of the examples of bronze work which have been found show artistic excellence of the highest degree and a skill in the handling of the metal not surpassed at the present time. How the work was done in those

copper to 1 tin is a soft metal which can be rolled and drawn. The dead black patina of some Japanese and Chinese bronze (we may here mention that the former are in some cases wonderfully accurate in the refinement of detail) is due to the presence of lead. In Europe the composition of the bronze used for statuary and art pieces is from 33 to 43 kg. of copper, 7 to 16 kg. of zinc and in some cases 250 to 500 grams of tin. The principal works in this country are cast with about 90 per cent. of copper to about 10 per cent. of tin. It is presumed that the famous Shield of Achilles described by Homer was a bronze. Although not sure of that, we do know that the composition there given could

the shell, while specimens have been found in which the bronze shell was cast on a core of iron.

### Different Modern Methods.

Coming down to modern methods, we find that the composition of bronze is formed with certain definite aims in view. Being of extreme fluidity when molten, it fills accurately and brings out all the fine details of the pattern. This fluidity is, therefore, most desirable, but in addition it must have the requisite strength, durability and a certain behavior when cooling in order to insure success. Many grand specimens of art work now to be found in this country and Europe show to what per-

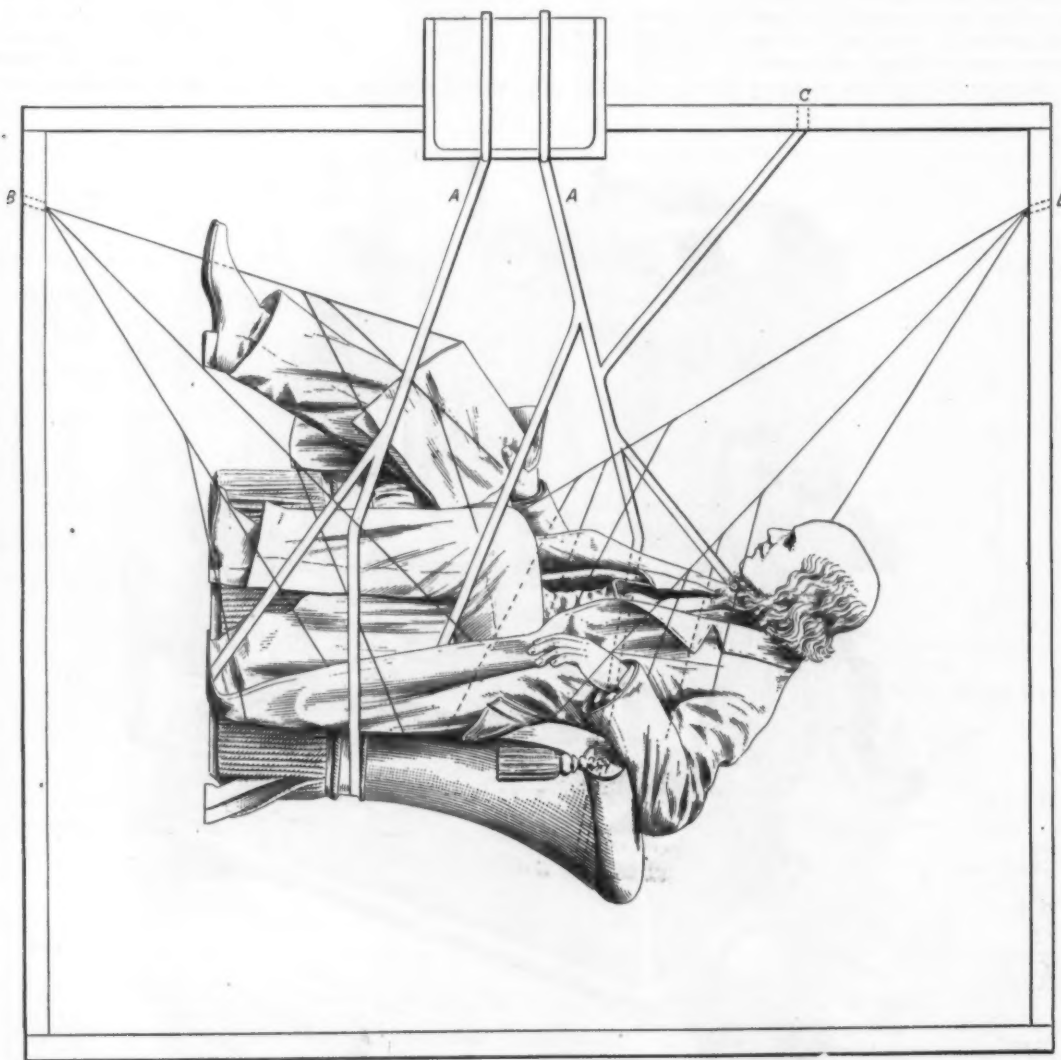


Fig. 1.—Method of Casting the Greeley Statue in Bronze.

days we have no method of finding out, except by conjecture and presuming upon the results now obtained; but we do know, from analysis, the composition of the bronze forming those pieces.

### Bronze Alloys.

This composition varied so much then and varies so much in different processes in different countries at the present time that it is simply impossible to define exactly the meaning of the word bronze, since it is copper alloyed with any one or several of many other metals. Thus the ancient Greek and Roman alloys consisted chiefly of copper, with zinc, tin, lead or silver, the percentage of copper varying from 70 to 95. A proportion of about 2 copper to 1 tin produced the well-known speculum metal; 3 copper to 1 tin gives a bell metal; 5 copper to 1 tin produces the tam-tam or Chinese gong; 8 copper to 1 tin is a bronze adapted for machinery bearings, while 16

produce a metal admirably adapted to the purpose.

### Ancient Methods.

The ancients left no record of the manner of producing their bronzes, and we can only judge of the processes by studying the examples found. Some of the weapons discovered, and which have been attributed to the bronze age and of course ante-date the more artistic pieces, were probably cast, and it has been assumed that they copied a pattern, since it can be supposed that a people far enough advanced to produce a casting would quickly learn that it would be easier to make a pattern of some material not so difficult to handle as bronze, and then melt and run the metal in. The earliest method as applied to statuary was to hammer it out in long thin sheets, which were then fastened together with nails. The early Greek artist cast with a core, evidently of sand, which could afterward be removed from

section the proper composition of bronze has reached.

In general, there are three methods of making what we may term a duplicate in bronze of a piece of art. *Repoussé* work consists in hammering a malleable sheet over a model until it conforms accurately with the contour of the piece to be duplicated. These pieces are then joined and mounted upon a frame work to give the necessary rigidity and strength, which are lacking in the thin metal plate. The largest example of this method is to be found in the Statue of Liberty. In this an accurate model in wood was made of the statue, and the sheets of copper were then hammered to fit this. The joints in all exposed places were end joints united by a strip on the back riveted to each plate. Lap joints were in some cases used where not likely to be seen. A frame was then accurately fitted and united to the shell, and from this frame extended braces and a



central supporting frame uniting the statue with the pedestal upon which it stands. It is evident that this method, owing to the fact that it is impossible without an extreme amount of labor to produce any texture in the surfaces, is not applicable to anything except the forming of colossal figures.

#### The Wax Process.

The processes now used for the reproduction of the artist's model are of two kinds, the *cire perdue* or wax process and the sand process. The former has been used in Europe, but the extreme care required at every step in the operation, the difficulty of reproducing objects of large size and the cost have gradually compelled its replacement by the sand.

The reproducing in metal by the wax process as pursued by Eugene Gonon of Paris consists in first covering the model with pieces of paper, upon which a piece mold is made, suitable ducts and vents

#### Sand Molding,

which is so well adapted for the reproduction of pieces of unusual size, and which in such cases is far superior to the other, is exclusively used in this country and very largely used on the Continent. This may be divided into the following stages: The making of a model of plaster, the piece mold, the core and the casting. To illustrate this process we have selected the statue of Horace Greeley, which now adorns the front of the New York *Tribune*, and which was cast at the Henry Bonnard Bronze Company, of New York, through whose courtesy we are permitted to explain in detail the operations connected with work of this character. Under the guidance of Eugene F. Aucaigne, the general superintendent of the company, who is familiar with every detail of the process and who has personally superintended the casting of many of the most important bronzes in the country, we saw



Fig. 2.—Core and Lantern.

being provided as the work progresses. This piece mold is then removed from the model and reassembled. The mold now becomes the pattern and is ready in this process to receive the gelatine and wax. A coating of wax superimposed upon gelatine, which has been applied to the surface of the hollow mold, is now applied, the amount used defining the thickness of bronze in the completed statue, since this wax occupies the space between the core and the mold into which the melted bronze is to be poured. The interior is now filled with a liquid core material, and upon this solidifying the outer mold is removed and any retouching done to the wax model, which now in reality is an exact duplicate of the original. The mold is then reassembled, and after suitable filling in and bracing upon the exterior, the whole thing is placed in an oven and heated so as to completely burn out all the wax separating the core from the mold, which conforms in every particular to the statue it is desired to make. The next operation is the pouring of the metal into the space through suitable leaders, vents, &c., having been provided for the passage of the metal and gases generated. This, in brief, is the process used where wax is the foundation.

the many steps leading to the reproduction in bronze of a plaster model.

This plaster model is, in every line and detail, a *fac simile* of what the bronze reproduction is to be. On this the artist spends the utmost care, bringing out every feature as his taste dictates, and looking carefully to the texture of the surface. Having completed this to his satisfaction, he sends it to the foundry, where all the final steps leading to its reproduction are performed. It may be well to state that all connected with the work have not only the mechanical ability and skill necessary in the performance of such an operation, but have a certain artistic sense which enables them to fully appreciate the aim of the sculptor and to aid most materially in executing his ideas. All the men in the Bonnard foundry have been engaged in this work from their youth, and in the operations connected with it have acquired skill only to be attained by long study, patient experiment and successful execution of works of high artistic merit.

The Greeley statue was cast in one piece. Sometimes, as in the case of Ward's statue of the Pilgrim, it is deemed expedient to divide the figure. In that case there are really three pieces, consisting of the head, right arm and remainder

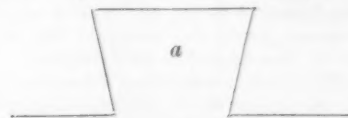
of the figure. In that instance the separated parts of the model were united by a Roman joint, which insured their accurate refitting and prevented the possibility of displacement or disarrangement, and then the three pieces were molded separately. After having been cast the parts were mounted and riveted and the joint trimmed down. It is one property of the bronze that a joint of this kind can be made without any danger of detection and without any liability of its becoming prominent in time.

#### Molding the Greeley Statue.

It was first imbedded for about one-half in sand, which merely served as a temporary foundation upon which to support the figure and the first half of the mold. This sand was then trimmed off to a level surface, which was provided with the necessary indentations and ridges, the use for which will be made apparent further on. Beginning at the junction of the model with this sand foundation a piece mold was begun.

It is evident that in the selection of the sand to form the mold extreme care is necessary. Many praiseworthy attempts have miscarried, owing to the failure of the bronze founder to properly appreciate the necessity of having sand of the right quality. It is first essential that he should make sure that the sand is fine enough and of such a texture as to reproduce absolutely and with the greatest minuteness every little detail of the figure. This is not easy to obtain. The next important requisite is that this sand should have such refractory qualities as will enable it to resist the heat of the molten bronze and to maintain, even when heated to that point, all its fineness of execution. These two points having been attained, the piece mold is built up.

This piece mold varies in the size of the pieces comprising it from specimens not  $\frac{1}{4}$  inch square to larger pieces weighing pounds. For instance, in molding in flat surfaces, like the back of the chair in which Greeley is seated, one piece will suffice, but in the molding of any places where it is not possible to "draw" the mold smaller pieces have to be inserted. This will readily be understood. When the surface of the figure retreats so as to form a cavity larger at the bottom than it is at the opening, it is evidently impossible to use pieces larger than the opening.



In this case the two corners of the cavity *a* would first be filled with two triangular pieces smaller than the opening. A third piece could now be easily introduced to completely fill the cavity. The contour of the pattern governs the shape and size of the pieces forming the mold. Each piece fits accurately with its neighbors, since they were molded upon it as much as they were upon the pattern, and this mutual dovetailing insures the correct reassembling of the piece mold as often as may be necessary. We now have these irregular openings filled, and it is then possible for the molder to do larger pieces which fit these, and reproduce certain portions of the figure, his experience and skill alone dictating their size and exterior conformation. In the Greeley mold there were some hundreds of pieces, all of which perfectly fitted together, and the interior surfaces of which united in a reverse reproduction or a negative of the model. In order to prevent the sand from adhering to the figure, and also to the several pieces, it is frequently dusted with talc or lycopodium powder. During this operation provision has, of course, been made for the entrance of the metal, and

also for the escape of the gases generated by the metal. How this was done in this particular case will be understood from the accompanying drawings. There are no arbitrary rules governing the placing of these inlets and gas vents, the whim, so to speak, of the molder alone serving to guide him. His first consideration is, of course, to insure the quick entrance of the metal to the spaces left between the core and the mold, also to make certain that every part will be vented, this meaning that there must be no part in which an air chamber can be formed, and he must further govern the entrance of the molten metal that it will cool and, therefore, contract evenly.

The piece mold, now finished, is removed from the pattern, the surface of each piece carefully examined, any defects corrected, of course the workman remembering that he is now working on the reverse of the figure, and the pieces then reassembled without the pattern. As they are reassembled the interior is packed closely with sand composed of a larger proportion of sand that has already been used in the outside case. The first molding is done with French mixed sand about half and half with sand which has already done duty. The core which is here used is made of sand which has been already used. The piece mold is again removed after the core has been finished. The mold is provided with so-called lanterns, shown in Fig. 2. These consisted of 2-inch perforated gas pipes arranged through the body and legs of the figure as shown. The gas generated in the interior of the mold finds its way through the sand of the core to these pipes, and by them is led outside. These pipes also serve to support the core.

In the Greeley statue the reassembling was first begun at the head and the core packed in as the mold advanced until finally the bottom or pedestal was reached. When the mold had been completed it was placed in an oven and carefully dried, the same operation being performed with the core after its completion. The mold is now removed again, which exposes the core, which should at this stage be an exact reproduction of the model.

This core is then pared down, a certain portion of every part of its surface being removed, the thickness of the part removed governing the final thickness of metal in the statue. The objects aimed at are to insure that at no place will there be a deficiency of metal, and also at no place an excess, since uniformity in the thickness is necessary to final success. The mold is then reassembled about the core, and is supported or held rigidly by outside packing in a suitable flask, when the casting is made.

#### Inlets and Vents.

While pressing his sand in place the molder had other things to think of besides reproducing exactly the plaster image. He had to provide for the quick and free entrance of the bronze to certain parts of the mold, and to insure that all the gas generated would escape. How he did this is shown in Fig. 1. In the Greeley statue, which was cast lying upon its back, there were nine attacks or points where the metal entered. On top of the mold is a reservoir, from which lead two 1½-inch ducts, A A. These pass around the figure and terminate at the points shown, the attacks on the opposite side not being indicated. In a certain sense the quantity of metal in any part governs the position of the attacks. It is expedient to place an attack where there is much metal; for this reason one is shown at the back of the neck, where there is a mass of hair. Leading from all the prominent or elevated portions of the figure are ¾-inch vents, which unite at the two vent openings B B, and through which the gas escapes. There is no set formula to be fol-

lowed in the arrangement of any of these passages, and it is more than probable that if this figure were again modeled they would be differently disposed.

Leading from one of the inlet passages is a passage to the overflow at C.

#### Pouring.

The final success now depends upon several things. First, the bronze must be of the right composition in order to flow and fill every crevice in the mold. Next, it must be heated to just the right temperature in order to insure this, and in order also to make sure that there will be no trouble upon its cooling. Too great heat or too little heat will ruin the result of many men's work for months.

By means of a crane, a ladle containing molten metal, which as here used consists of 90 per cent. of copper and 10 of tin, is brought so that it can be poured into the reservoir, the two openings from the bottom of which are stopped by iron plugs covered with sand, as shown. It is important that this reservoir should hold a certain amount of metal, since after the filling has once begun it would ruin the result if the openings became uncovered. At the right moment the two plugs are withdrawn, and as the metal flows from the reservoir into the cavity of the statue more metal is poured from the ladle, thereby keeping all the dross on the surface, and making sure that nothing but pure metal shall enter the mold. The fact that the mold has been filled is shown by the appearance of the molten metal at the overflow C, it then being certain that the metal has passed over a certain road, which is the space it is necessary to fill, and that the surplus has found its way out here.

The mold being then removed, the figure presents a unique appearance. At every point where the metal has entered the mold there is a spine or branch, and at every point where an air duct has been provided there is a similar spine, so that the figure looks like an uncouth porcupine whose quills have been strangely and wonderfully distorted. The figure is now cleaned of all sand, the spines cut off with a chisel, any ridges left by the sections of the mold removed, and the whole thing, so to speak, cleaned up. It now presents an iridescent color, the several portions of the surface varying very strangely from each other. An application of acid brings the surface to the same color all over, and then, if considered desirable, an artificial patina is applied, but in the case of the Greeley statue this was not considered desirable.

#### Descending and Ascending Methods.

There are two methods of introducing the metal to the mold. In the descending method the metal enters the highest points and flows downward to the lowest. In the other, which is here practiced and which is decidedly superior, the metal enters at the lowest points and pushes its way upward until it reaches the overflow on a level with the reservoir. In the downward method the metal attains a momentum which must be checked before complete filling will occur and there is therefore more danger of leaving some cavities unfilled. In the other process, however, the metal fills every cavity during its ascent, and while it, of course, moves rapidly, there is still time sufficient for this. The best results are obtained in the way here illustrated.

It will be observed from the foregoing that this process is decidedly more direct and simple than the wax method, and that providing the casting is successful, the results obtained are better for larger work. The only thing governing the size of the work which can be cast in one piece is the difficulty of obtaining an even flow of the metal and

the absolutely complete filling of the space between core and mold. If this could be assured, the most intricate shapes could be easily molded and figures of the greatest size and complexity could be made without trouble.

#### Bronze Casting in this Country.

In closing we may mention that while the art of casting in bronze has only been carried on in this country for a very few years we are now in position to compete successfully with the oldest and best founders of Europe. This is shown by the many beautiful specimens of bronze work scattered through the country and which, for perfection of workmanship, will bear comparison with the best. That this estimate is held by artists is attested by the fact that a few days since the Bonnard Bronze Company received the contract for casting the bronze doors for Trinity Church, New York, this company being practically in competition with the most famous founders on the other side. These doors will be cast in one piece—a work never before attempted on such a large scale.

#### A Well-Equipped Foundry.

The John B. Morris Foundry Company, of which John B. Morris is president, Geo. McGregor Morris secretary, Wm. H. Edwards treasurer, have erected and completed their new plant, located at the corner of Court and Harriet streets, Cincinnati, Ohio. It is a brick structure having 275 feet of frontage on Court street and 125 feet on Harriet street. The building is shaped in the form of an L, the portion abutting on the last named thoroughfare being four stories in height, 75 x 125 feet, the balance of the depth being occupied by the foundry, 90 x 200 feet. Entering at the corner of the first floor are located the general and private offices and counting room, each occupying space of 16 x 25 feet. To the left of these are arranged tiers of racks and bins occupying space of 77 x 75 feet, in which are kept in stock thousands of repairs for nearly every stove ever produced; passing through this stock room, entrance is had to the foundry or molding floors, occupying space of 90 x 200 feet. This being a one-story building of brick, it is amply provided with light both from its three sides and skylights running the entire length of the roof. A 15 x 30 foot space in one corner of the foundry is taken up by an improved apparatus for the drying of cores used in molding. To the left of the molding floors are located respectively the engine room, 25 x 25 feet, with a 75 horse-power engine, cleaning room, 35 x 65, and the 30-ton cupola, with elevator for hoisting the pig metal, coke, &c. The cupola is equipped with a No. 5 Root combined blower and engine. The yards are 100 x 65, a portion being taken up with coal and coke, sheet flasks, &c. Again referring to the main building, the entire second floor is utilized as a machine shop, a central or main shaft running through its full length, 125 feet. Here is located all the necessary machinery used in the production of tools required and of the various specialties made by the firm, the third floor being used as a finishing and packing department, while the fourth floor is entirely given up to the storage of patterns, an elaborate system of racks and sections being used for the purpose. Ample provision is made for the transfer of material from floor to floor by means of large elevators in addition to broad stairways. The capacity of the foundry is such that it gives employment to 75 to 85 snap molders a day. The company are now employing 142 hands, and increasing this number daily in the production of stove repairs, hardware specialties, builders' and plumbers' goods,

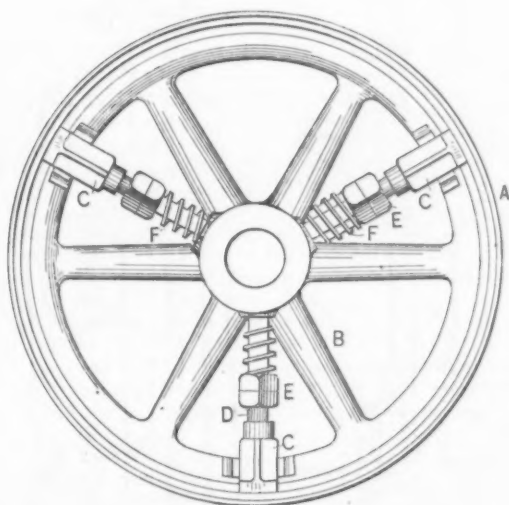


and a variety of soft gray iron castings, their first heat in the new plant having been made March 5, 1891.

### The Munsing Pulley.

The Munsing Pulley Company of Minneapolis, Minn., have designed a pulley applicable to two different classes of machinery. Their object is, first, to employ it as a safety pulley on any machine where there is a liability that the working parts may become clogged, so that a further movement of the machine would be detrimental. In this case the friction blocks C C are adjusted to give the necessary tension to properly drive the machine under ordinary circumstances. Any extra resistance which would lead to clogging causes the friction between the rims and the blocks to be overcome, and the rims continue to revolve with the belt and the central portion of the pulley stops.

A second application of the pulley is to fast-running machines, where it is neces-



The Munsing Pulley.

sary, to overcome the momentum, that an excessive strain is brought upon the belt when the power is first applied. In this case the power is shown applied to the central portion of the pulley, which revolves within the loose rim until the friction between the latter and the blocks is sufficient to overcome the momentum. This starts the machinery gradually, without any extra strain upon the belt or slowing down of the machinery or the annoyance occasioned by shrieking. It makes it possible also to use a much narrower belt to do the same work. A glance at our drawings will show the construction of the pulley itself. The rim A over which the belt passes can revolve independently of the central portion B, which is secured to the driving shaft. To the central portion B are attached the friction blocks C C and are arranged by springs to force outward, and brought into contact with the loose rim A. Suitable screw bolts D bear upon the ends of the friction blocks and extend radially toward the hub. These blocks are provided with nuts E, and are surrounded by spiral springs F, so that the friction between the blocks and the rim can be increased at will by putting more or less tension upon the springs F with the aid of the nut E. The pulley has been in use at a number of local works and is well spoken of by the users.

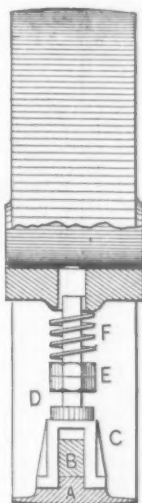
The fifty-ninth meeting of the American Institute of Mining Engineers will be held at Cleveland, beginning on Tuesday, June 2.

### An Assistant Cylinder for Marine Engines.\*

BY DAVID JOY.

By the courtesy of your Council I again have the honor of asking your attention for a few minutes to the results of some further work I have been engaged in, still in the direction of my former course of work—"The Valve Gearing of Steam Engines."

For several years I have been directing my attention to the possibility of driving the valves of large and fast running engines, by the direct pressure of steam or water, exerted in a cylinder, and so clearing away all the complicated and cumbersome machinery, to which the valve gear of the modern marine engine has grown. In following out the course of investigation to which this aim has led me, I have tried a number of experiments, and in the course of them have been induced by circumstances to take first only one step in advance of the ordinary valve gear, by



B and C (Fig. 14) are from the first type of cylinder shown in Fig. 1, and where a valve was used, moved by the steam. Figs. D, E and F, (Fig. 15), are from the second type of cylinder, where the piston became its open valve, as in Fig. 3. I have given these diagrams letters only, and not figures, as they are only introduced to show the progress toward the present results.

From an inspection of these earlier forms of the machine, it will be very evident how, as usual in the introduction of any new piece of mechanism, the most complicated and elaborate form came first. And, by experience, gradually the complications are dropped off one after another, resulting in the simplest form, as shown in Fig. 6.

As I have named already, it was while trying over various designs for working the valve direct by steam, that the idea occurred to me that a step in that direction might easily and without much cost be taken by accepting the engine and its valve gear as it stood, and, abandoning the ordinary balance cylinder, to supply its place by a live steam cylinder capable of exerting a controllable driving power, in unison with the existing valve gear. So, after a great deal of scheming to get such a cylinder, with all the requirements for an adjustable and definite motion, and with the greatest simplicity and fewness of parts, I decided to adopt a cylinder with a steam moved valve, as shown in Fig. 1; and during the meeting of this institution in the spring of 1889, I showed my designs to Mr. William Laird and to Mr. Bevis, suggesting their taking up the system and trying it. After carefully examining the designs, appreciating the advantages intended to be gained, they readily acceded, and ordered one cylinder, which was to be fitted on the engine of one of the torpedo gunboats they were then building. At the same time I submitted, and we discussed the design of the cylinder where the piston acted as its own valve. But it was considered best to adopt the form which gave more facility for adjustment in all directions, notwithstanding its greater complication. The machine was made and delivered at Chatham in July of that year for attachment on the engines of H.M.S. Skipjack, and a second was ordered for the second set of engines on the same ship.

And now it will be convenient, in the continuation of the paper, to go on in the plural, as, though hitherto I had been quite alone, from this time I was greatly assisted in bringing the machine to its present state of efficiency by the very practical and willing co-operation and independent criticism of Mr. Ratsey Bevis. I ought not here to omit a word on the further help rendered by Mr. Bevis' assistant, Mr. Gibson, and of my son's enthusiastic efforts in filling my place when I was not able to be present at the trials. Almost immediately after Messrs. Laird ordered two more assistant cylinders for the engines of another torpedo gunboat.

Early in August we got trials of the cylinders on the Skipjack, when, up to 150 revolutions at dock trials, the result appeared to be quite satisfactory. I say appeared, because, owing to the nature of the machine, with all the parts internal, and all valves shut up in their chests, it was very difficult to follow adequately their movements, or to know what was really going on. Both these ships, however, successfully ran their trial trips.

Now, leaving these cases, as it is not my object to drag you with us through all the difficulties of the introduction of a new machine, I come to Messrs. Laird's further order for four machines for the engines of two almost similar ships. The first of these cylinders were to be similar to those already employed, but they were to be fitted with indicator bosses, both top

relieving such gear of a part of its work, and so lengthening its life; this step, however, I believe to be an advance toward the substitution of the direct action of steam, for the movement of the valve, and not by any means an ultimatum.

The machine I am going to describe tonight, and I hope to prove a move in advance in the right direction, I propose to call a "Steam Assistant Cylinder," as it is applied to the valve spindles of large and fast running engines, to relieve the strains thrown upon the valve gear of such engines from the great weight of the valves now required, and the great speed at which it is necessary to drive them.

The machine is represented in its position in relation to the valve of an engine in section in Fig. 6, where its attachment to the valve is also shown.

In Figs. 1, 2, 3 and 4 are shown the original forms through which it was developed to that shown in Fig. 6, probably the permanent form. This represents an assistant cylinder for the valve of a low-pressure engine cylinder, 56 inches in diameter, and with a valve stroke of 6 inches. In Fig. 7 is given a pair of the earlier diagrams taken from cylinder No. 3, and in 8 and 9 are the analyses of those diagrams.

In Fig. 10 are diagrams from the same cylinder, No. 3, after alterations, and Fig. 11 are from cylinder 4. Figs. 12 and 13 are analyses of diagrams Fig. 10. Figs. A,

\* Paper read before the Institution of Naval Architects.

and bottom of the cylinders, and other improvements, part of the adjusting levers also being done away with. On the trial of the first set (see Fig. 1) on the engines on the Almirante Lynch, we had rigged up a sort of "stethoscope" to apply to the valve chest at one end and to the ear at the other, so by that means to detect what the valve was doing, as we could not see it. Though this instrument might have done very well in a quiet room, as it gave the ticking of a watch very distinctly, the roar of a couple of sets of 2000 horsepower engines was too much for it. Mr.

disappointing. (See Figs. A, B and C.) It was now decided to replace two of the cylinders on the Almirante Lynch by two of the other type, as given in Fig. 3. And again, the experiments on these cylinders were renewed. The indicator cards now showed a vast improvement, though still very perplexing, with their loops and twists (see Fig. 7), and nothing to show which was the steam and which the exhaust line, as they had nothing in common with ordinary steam-engine indicator cards. Yet unknown to us there was more work being done in the right direction than we

much better than the former ones, there were eccentricities in the behavior of both the steam and exhaust lines which we had not yet accounted for; so, to analyse these at our leisure, I had a cardboard model made, of the full size of the cylinder we were employing, with all the movements given, and all scaled off. And again we had a consultation.

By moving the piston on the model and following the effect that must occur on its passage over the ports, it was evident that the piston must get knocked about from side to side by the recurrent action of the

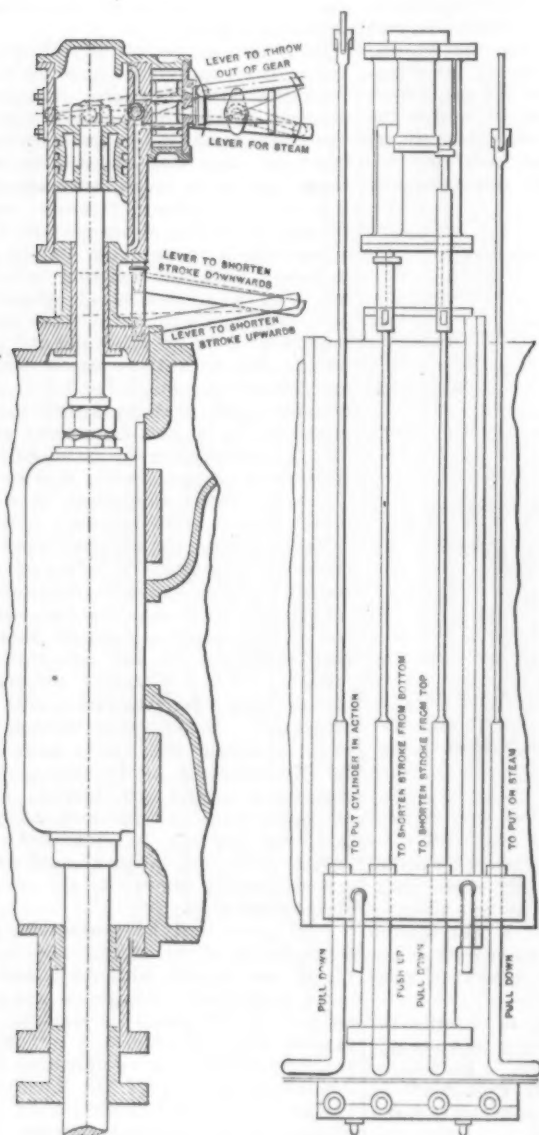


Fig. 1

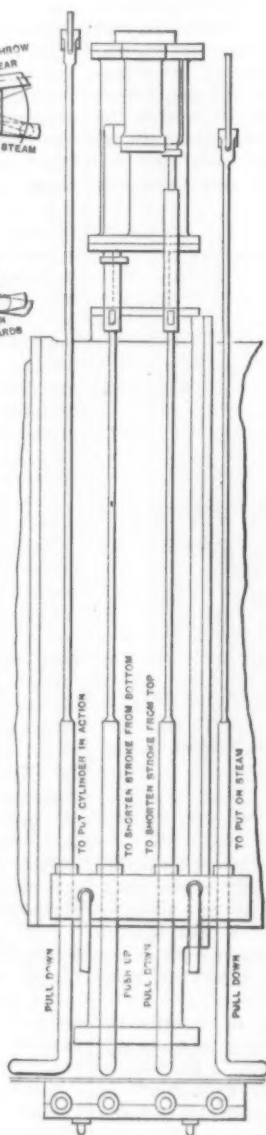


Fig. 2

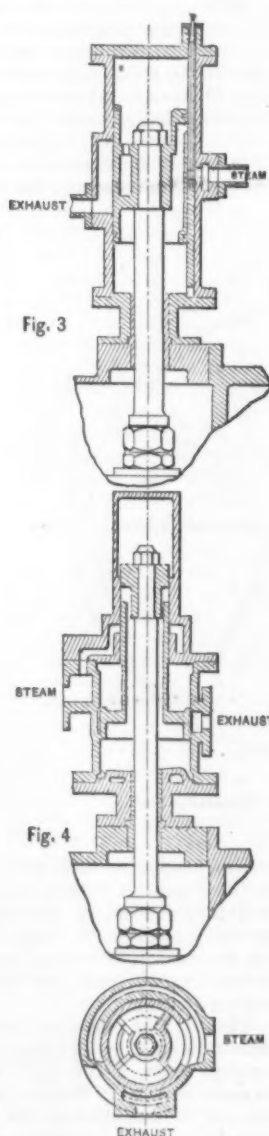


Fig. 3

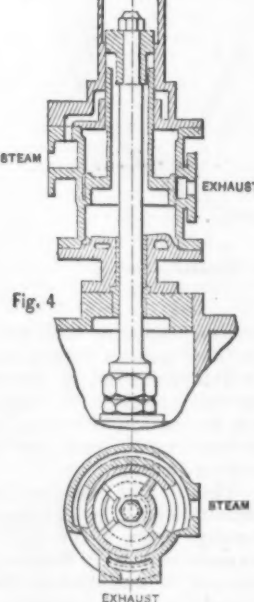


Fig. 4

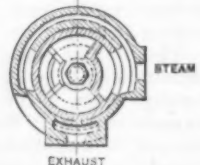


Fig. 5

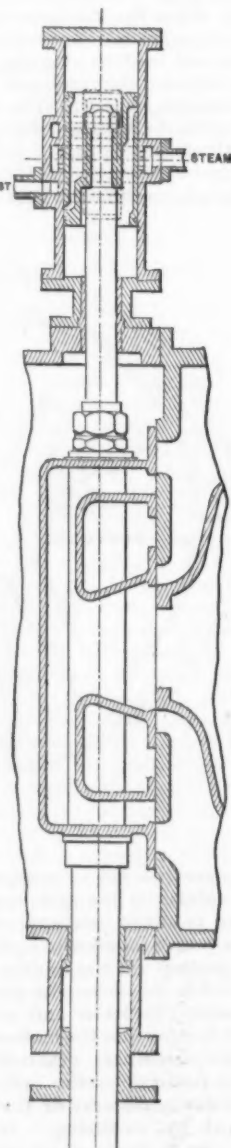


Fig. 6

#### JOY'S ASSISTANT CYLINDER FOR MARINE ENGINES.

Bevis then applied a small brass rod to the top of one of the valves, carrying this rod through the top of the valve-chest lid, but we did not learn much from this. I am much surprised that at this juncture it did not occur to any of us to lead the exhaust out into the open; we might then have had a very good record of the action of the valve, as one judges of the valve setting of a locomotive by the "beat" of the engine.

Meanwhile indicator cards were being taken diligently and continually up to speeds of about 250 revolutions, when the indicator got into a dance that stopped all record. From this time, however, we began seriously to approach the solution of the question, though the resulting cards proved at first an utter enigma, and from our not being able to read them, were very

were aware of. (See analysis of Fig. 7 and those marked Figs. 8 and 9.)

The next step toward light came of Mr. Bevis having a set of diagrams taken at slow speeds, and only one line of the course of the piston taken at once, so that the steam line only for the upstroke was taken on one card, and the exhaust line of the same stroke on another card, and so also of the down stroke, four cards giving one revolution. On these results we had a consultation, Mr. Bevis proposing a new reading of the cards. This ended in my taking home with me these diagrams, and having constructed an analysis of them, as shown at Figs. 8 and 9, where the diagram 8 shows the lifting stroke, and 9 the falling stroke.

Although these diagrams showed up

steam and the exhaust, and that considerable and very erratic leakages must take place, as well as a very large and permanent leakage past the slide for adjusting the cut-off of steam for top and bottom stroke.

Therefore it was decided to block the adjusting slide on one cylinder, that leakage would be entirely checked in that direction. This was done, with the result that the indicator cards, Fig. 10, came off at 250 revolutions. And these are analyzed in Figs. 12 and 13. Here the lifting power for "assisting" the movement of the valve is represented by 11,816 pounds, and to be in operation during 0.70 of the stroke. The "cushioning" of its momentum at the top is 2828 pounds, the "assisting" power down is 8008 pounds, and is in operation during 0.63 of the stroke,



and the "cushioning" or resistance at the bottom is 5048 pounds. These appeared to me to be such satisfactory results that I have endeavored to repeat them since.

There still remained, however, the leakages round the piston to be dealt with, arising from its being out of balance, and so being forced from side to side in its passage over the ports, so allowing steam to pass round it. To meet this difficulty, the next cylinders ordered by Messrs. Laird for the torpedo gunboats Rosales and Espora, for the Argentine Government, were built on the plan shown at Fig. 4. Here the piston was in entire balance, receiving steam all round, and exhausting all round. This plan also gave room for vast port area in both ways. The results given by these cylinders were very good, and the indicator cards are shown at Fig. 11. In the construction of this form of cylinder, steam tightness depends on the excellence of the work done by the tool—and this is all turning, and no reliance is placed on the workman's fitting, except in

spindle; so there are no loose parts to shake away, no special arrangements to make, which may alter or vary by looseness. But the piston itself performs all the functions of distributing the steam, and releasing the exhaust—but that being so the remark may be made, then you can get no more steam than you have "lead;" of course that is so. But, firstly, we want a good deal of lead for efficient cushioning; and to provide steam for each driving stroke sufficient clearances are allowed at each end of the cylinder and in the piston to allow of what, to use a gunnery term, I may call a "charge" of steam sufficient by its expansion to give out all power required. Then for the manipulation of the machine. On starting the main engines it is only necessary to turn on a "whiff" of steam to slightly fill the cylinder—so that it becomes inoperative but not obstructive—till the main engines have fairly moved. More steam is admitted as the speed increases till, by the quiet of the valve motion, it is clear that the assistant cylinder has settled to work.

(supplementary paper), by Dr. E. J. Ball, Royal School of Mines, London; "On a Graphic Method of Calculating the Composition of Furnace Charges," by H. C. Jenkins, F.C.S., Whitworth Scholar, London; "On the Calorific Efficiency of the Puddling Furnace," by Major L. Cubillo, Trubia, Spain; "On Economical Puddling and Puddling Cinder," by Thos. Turner, Mason Science College, Birmingham; "On the Micro-Structure of Steel," by M. Osmond, Paris.

The New York Concentrating Works, with a capital of \$100,000, have filed a certificate of incorporation in the Secretary of State's office. The company are formed to mine, smelt or otherwise treat, concentrate and deal in iron and other metallic ores and their products, and to manufacture and sell, and to license others to manufacture and sell inventions, processes and mechanical contrivances applicable to the objects of the company. The operations of the company are to be carried on

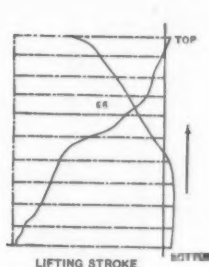


Fig. 12.

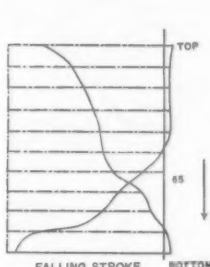


Fig. 13.



Fig. 14.



Fig. 15.



Fig. 16.

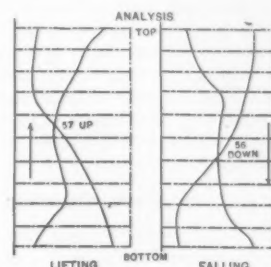


Fig. 8.

Fig. 9.

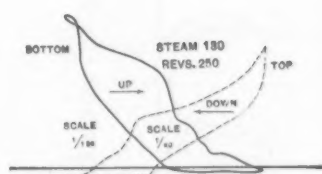


Fig. 10.

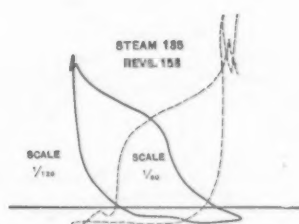


Fig. 11.



Fig. 7.

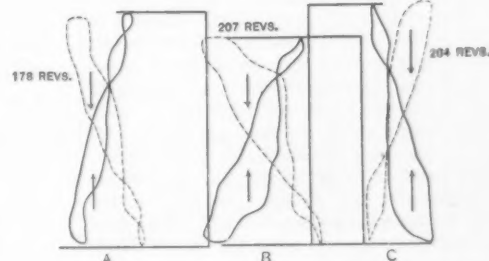


Fig. 14.

#### JOY'S ASSISTANT CYLINDER FOR MARINE ENGINES.

the one point of fitting the lid accurately into the cylinder, but as the steam ports are produced, by one centering and turning on the lathe, and the exhaust by another. The piston, of course, depending on only one centering, the possibility of a misfit between the cylinder and the lid might allow leakage at the ports. So the final form has been arranged to meet this possibility. Here the cylinder with all the ports is the result of one boring, and the piston of one turning, both lots of ports hold the piston in balance, and both are ample in area, and have ample cover. (See Fig. 6.)

And now, lastly, I must give you a very short description of the machine itself, and its *raison-d'être*, as well as its operations.

The machine is made to take the place of the ordinary balance cylinder. But it does much more, as has been seen; it should take most of the strain of moving the valve away from the ordinary valve gear, so saving wear and tear, and the trouble often given by eccentrics. And doing this it is equally applicable to horizontal engines.

The engine is simplicity itself, consisting only of a cylinder and a piston, the latter locked on to the end of the valve

The system has now been taken up by other firms, both in this country and on the Continent, and promises, I hope, general adoption on the class of engines for which it was designed.

#### May Meeting of the Iron and Steel Institute.

The papers to be read at the London meeting of the Iron and Steel Institute of Great Britain, May 6, 7 and 8, are announced as the following:

"On the Ironmaking Resources of the Southern States," by Prof. John R. Procter, Frankfort, Ky., U. S. A.; "On the Coke Industry of the United States," by J. D. Weeks, Pittsburgh, Pa., U. S. A.; "On the Manufacture of War Material in the United States," by W. H. Jaques, Bethlehem Iron Company, Bethlehem, Pa., U. S. A. "On Tests for Steel used in the Manufacture of Artillery," by Wm. Anderson, D.C.L., Director-General of Ordnance Factories, Royal Arsenal, Woolwich; "On Certain Pyrometric Measurements and the Method of Recording Them," by Professor Roberts-Austen, C.B., F.R.S., Royal Mint, London; "On the Changes in Iron Produced by Thermal Treatment,"

in the town of Putnam, in this State, and in other States and Territories and foreign countries.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh have closed a contract with the St. Louis Stamping Company of St. Louis, Mo., for a number of rolls to be used in their plate plant. They have also received an order from a new concern, to be known as the Minneapolis Rolling Mill Company, now being organized at Minneapolis, Minn., for an 18-inch three-high muck train, a bar train and squeezers. The squeezers ordered are of very large size, being considerably larger than many squeezers now in use.

It has been stated that the railroads traversing the Mahoning and Shenango Valleys have suffered enormously as the result of the general shut down of the furnaces in those districts. The railroad business is said to have fallen off from 30 to 40 per cent., and if all the furnaces were to shut down fully one-half of the business would be gone, and the other half would follow as a result of the stoppage of the rolling mills.

## OUR BATTLE SHIPS.

### United States Armored Coast-Line Battle Ships.

[With Supplementary Sheet of Engravings.]

Even the most sanguine supporters of the so-called new navy did not dream that such rapid strides would be made that in less than a decade we should be prepared to build battle ships superior to any in the English navy. It was not thought that our engineers would be sufficiently experienced, our plants so well equipped and our gun factories so far advanced, as to enable us to design and build a war vessel amply able to take care of itself, if pitted against any of the famed destroyers of Europe. Yet such is the fact.

The three battle ships, of which drawings are here presented, are very different both in plan and purpose from any of those we have described in former issues. They are not designed to have speed enough to allow them to assume the most desirable position, but are expected to fight anything that may come against them. Their armor is of sufficient strength to resist the fire of an attacking force, while the battery is of the heaviest serviceable description.

#### Foreign Opinion:

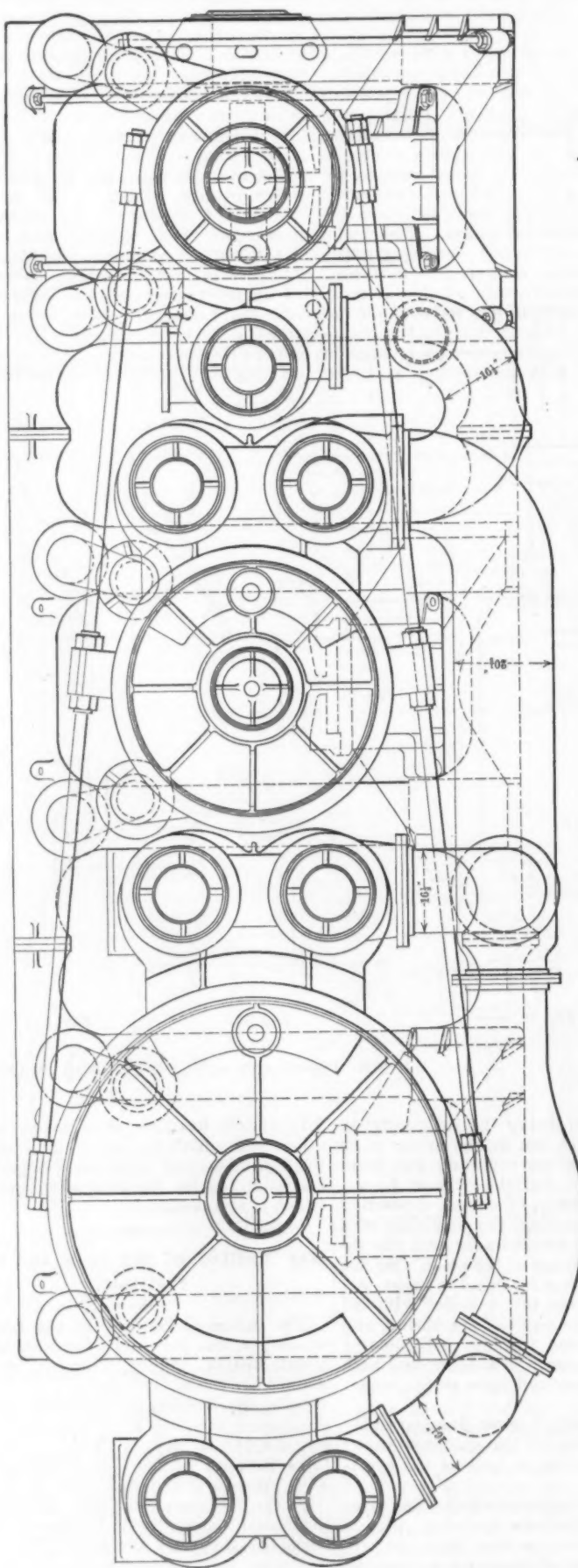
In a paper recently read by J. H. Biles before the Institution of Naval Architects we find the following remarks about these vessels:

The armament of these vessels seems to be more powerful than that of any European battle ship, having four guns capable of piercing any armor afloat and eight 8-inch guns capable of penetrating almost any armor, and certainly of penetrating the armor at the ends of the belts and on the barbettes and redoubts of most of our battle ships at close quarters. Of course, in order to attain this result something has had to be sacrificed; or, rather, something is not existent in these ships which exists in the larger ones. The speed estimated compared with our latest battle ships is probably about  $1\frac{1}{2}$  knots less. The coal supply is 500 tons less. The breadth of the armor belt is 1 foot less, but it is as wide as that of the Admiral class, which have not the advantage of the 5-inch belt above.

As these vessels will probably have to act very much nearer their base than European vessels, their bottom will probably be in better condition, so that the real speed will not be much, if any, less. For the same reason their coal supply need not be so large, and therefore it would seem that their preponderance of armament would give them an advantage in a combat near their own coast line with any European vessel. They are distinctly superior in most respects to any European vessels of the same displacement, and for the purposes intended, of protecting the American coast line, they seem to be quite a match for any ships afloat. They can keep the sea as well as any battle ships, and must not be looked upon as coast-defense vessels in the ordinary restricted sense, though they are called coast-line battle ships. Compared with the Admirals, their freeboard at the ends is 15 inches higher, and compared with the turreted battle ship Hood, it is practically the same. It is, however, 8 feet less forward than the barbette battle ship of the Royal Sovereign class. Judging by the amount of water which will come on board an Atlantic liner with a freeboard forward of 26 feet, the chance of fighting the 13-inch turret guns end on in a head sea is not very great, but the 8-inch guns could

probably be fought in almost any weather. The bunker capacity of 1800 tons might possibly be useful to an American ship if she had to steam from the east to the west coast of America by passing round Cape Horn, but if she did this in time of war

ship will be superior at her normal draft to the Royal Sovereign class, on account of her less length and draft. The excessive cutting away of the keel forward is done to improve the maneuvering power and to reduce the height of the bow wave.



PLAN OF THE ENGINES OF THE U. S. COAST-LINE BATTLE SHIPS.

she would have to run the risk of meeting an enemy soon after leaving port, when the coal might be a great disadvantage to her on account of the decreased speed she would have, owing to being 3 feet deeper in the water. In maneuvering power the

Whether the amount of reduction in the height of the wave will be appreciable is doubtful, but the cutting away of the gripe certainly involves considerable loss of displacement and brings the point of the ram very close to the water line.



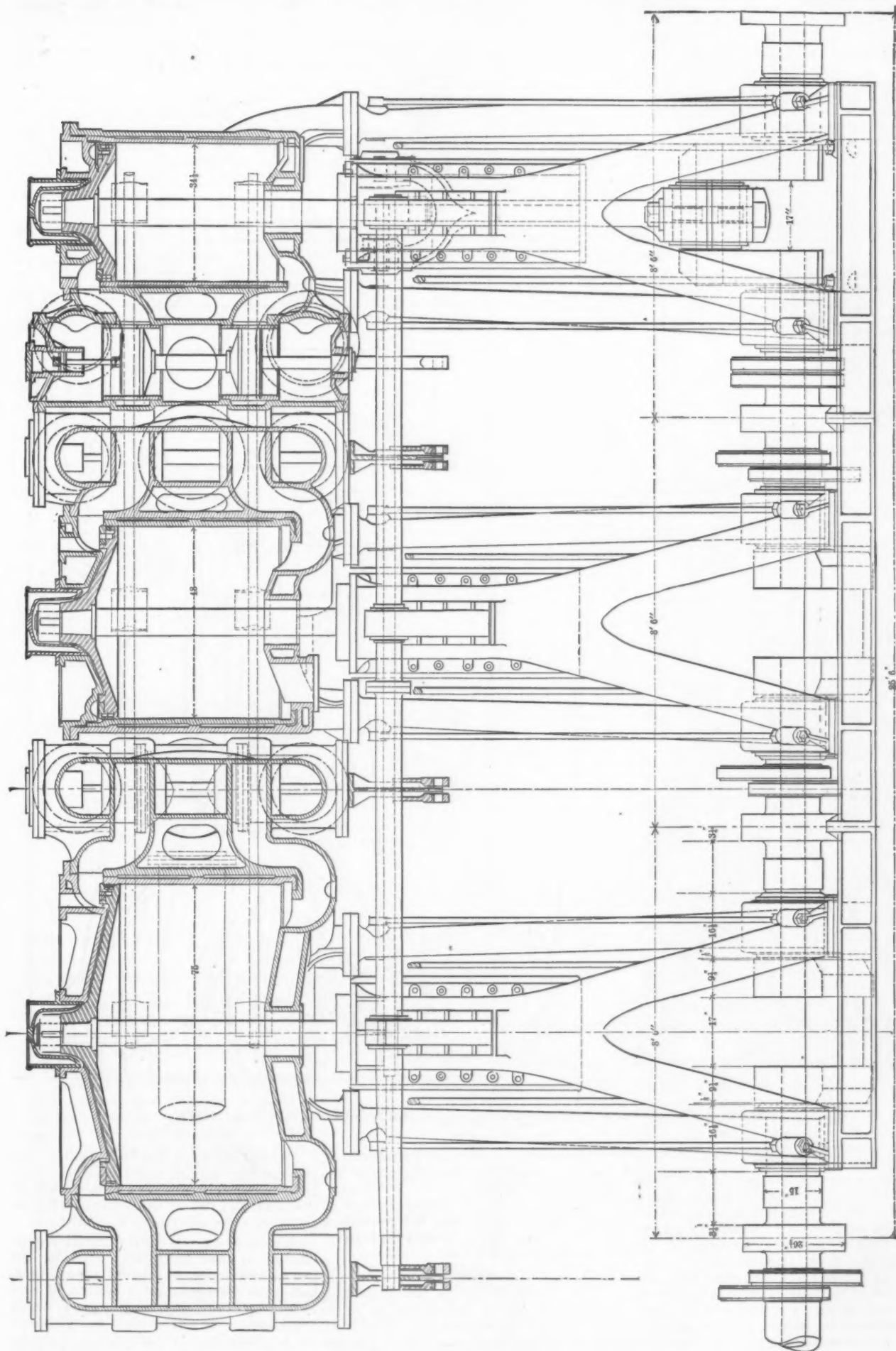
### General Description.

From the specifications issued by the Navy Department we take the following description of these ships:

draft suited to work in our shallow harbors.

The hull is protected by belts of heavy armor 7½ feet wide turned in forward and

Forward and abaft this belt are heavy under-water protective decks, sloping at the sides to 4½ feet below the water. There is also an armored deck over the



ELEVATION OF THE ENGINES OF THE U. S. COAST-LINE BATTLE SHIPS.

The vessel is of great fighting power united with adequate protection, able to take the sea in all weathers, and with aft to sweep around the bases of the armored redoubts, the whole including about 75 per cent. of the water-plane area. Coal bunkers are worked over the belt deck, and belts of water-excluding material are worked on the slopes of the

armor deck forward and aft. Above the belt armor and extending from redoubt to redoubt the side is protected by 5 inches of steel.

The vessel is cut up forward, making a powerful ram bow, and doing away with excessive bow waves on account of the easier lines so obtained, as well as greatly adding to the maneuvering power.

Length on the water line, feet.....	348
Breadth, extreme, feet.....	60½
Draft forward and aft, feet.....	24
Displacement, tons.....	10,200
Maximum speed, knots.....	16.2
Sustained sea speed, knots.....	15
Tons per inch.....	42
Engines, horse-power.....	9000

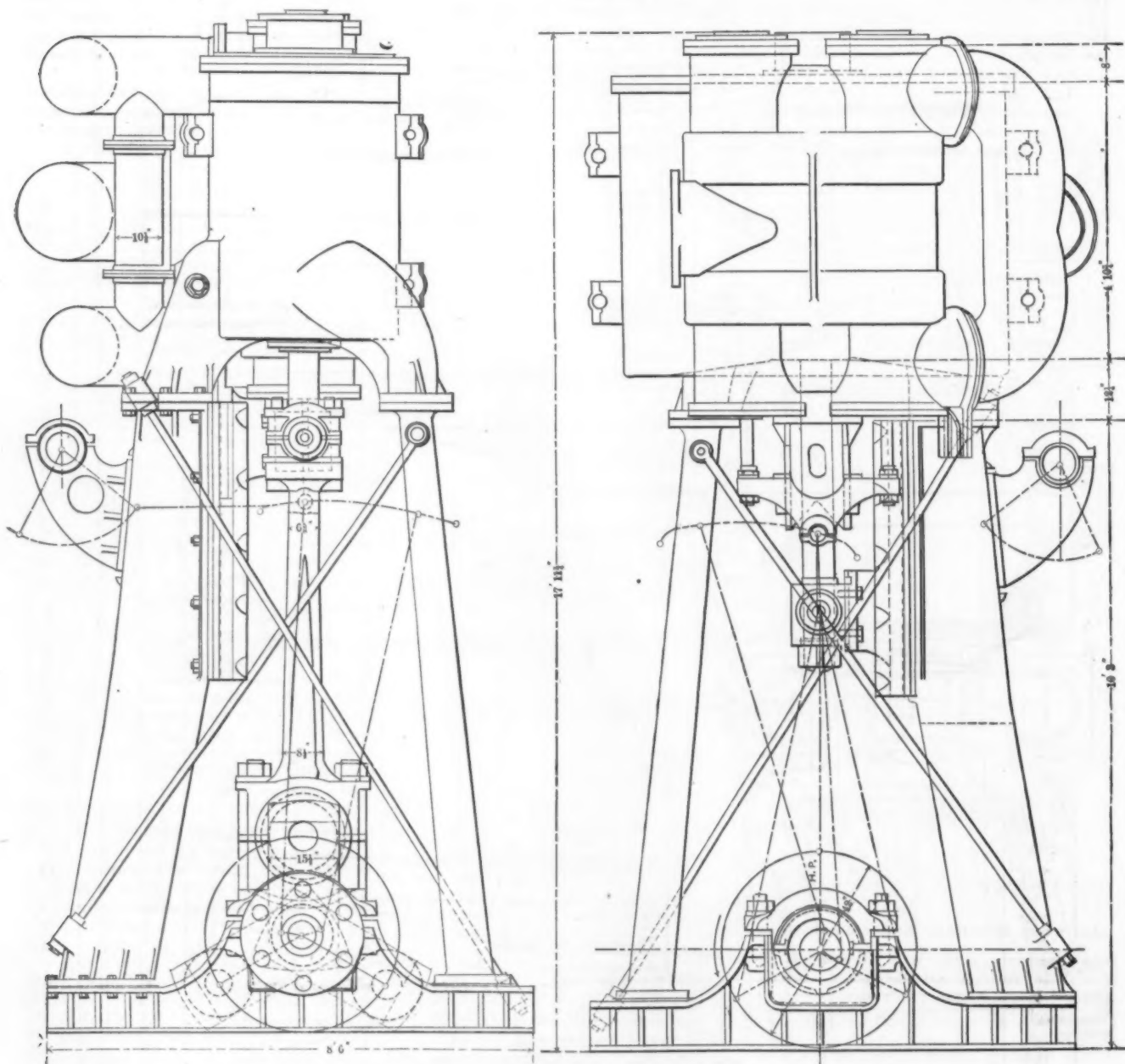
The 8-inch guns have barbettes of 10 inches, inclined turrets of 8½ inches, and cone bases and loading tubes of 3 inches.

The 6-inch guns are protected by 5 inches of armor and have 2-inch splinter bulkheads worked around the deck, inside of which the ammunition for these guns is set up.

The 6-pounders, where mounted between decks, have 2-inch armor worked around them; elsewhere they have the usual service shields. The 1-pounders are protected by 2 inches of steel.

The deck over the belt is 2½ inches, and at the ends the under-water decks are 3 inches. These decks are made up two

The 13-inch guns are 17½ feet above the water and have great arcs of train. The 6-inch guns are 14 feet 10 inches above the water, and all fire across the center line. The 8-inch guns are mounted 24½ feet above the water, and can fire over the tops of the 13-inch guns, having a train of 14° across the middle line. These guns can pierce at 2 miles the armor of many of the modern armored cruisers of great coal endurance. They can be brought into action early in the engagement on account of their great height, and can be used with great effect against the lighter armored and unarmored parts of the heavier battle ships.



SIDE ELEVATION OF ENGINES OF U. S. COAST-LINE BATTLE SHIPS.

#### Armor.

There is a water-line belt 3 feet above and 4½ feet below the water line of 18-inch armor. Rising from this at each end are armored redoubts of 17 inches in thickness extending above the main deck 3½ feet, giving an armored freeboard of 15 feet 2 inches. These redoubts protect the turning gear of the turrets and all the operations of loading. The turrets are inclined, 17 inches thick, powerfully strengthened. The horizontal thickness of the turrets is 20 inches. The side armor belt is backed by 6 inches of wood, two ¼-inch plates and a 10-foot belt of coal. The vessel above the belt has 5 inches of armor protection.

thicknesses of ¼-inch mild steel plates, with the remaining thickness all in one plate of steel armor.

There is a 10-inch armored conning tower, with a 7-inch tube for protecting the voice pipes, electric wires and steering connections.

#### Armament.

Four 13-inch 35-caliber breech-loading rifles; eight 8-inch breech-loading rifles; four 6-inch breech-loading rifles; 20 6 pounder rapid-fire guns; six 1-pounder rapid-fire guns; two Gatlings; and six torpedo tubes or guns.

This represents a weight of armament superior to that of any of the latest battle ships laid down by foreign powers.

Special attention has been paid to the ammunition supply, and a rapid, efficient, and thoroughly protected supply has been secured, and one which it is believed is an advance upon all systems now in vogue.

The powerful secondary battery is protected in part by shields built in the vessel and in part by shields on the mounts, and is so disposed that a stream of projectiles will radiate from the vessel, which will lead to the almost certain destruction of any light boat venturing within range.

Fixed torpedo tubes are carried at the bow and stern, and two training tubes firing through 5 inches of protection are carried on each broadside.

All modern appliances for offensive and



defensive purposes, such as torpedo defense nets, search lights, &c., are carried, and weight is reserved for any new fittings or devices which the constant progress in the art of war will most certainly develop as the work progresses.

Great care has been taken in disposing this great battery that one gun will not interfere with the line of fire of another, the boats have been stowed amidships where the blasts cannot reach them, and special strengthening has been given to the sides and deck, that they may withstand the effect of the great strains brought upon them by the fire of the larger guns. The 13-inch guns are kept 6 feet above the deck at the middle line.

An armored conning tower of 10-inch plates is built forward, having an armored tube to protect the communications, by means of which the commanding officer will direct the movements of the vessel, guns and men. Rising from this conning tower is a military mast, carrying two tops for rapid fire and machine guns, the am-

The diameters of the cylinders are, high pressure 34½ inches, intermediate 48 inches, low pressure 75 inches, stroke 42 inches.

The condensers are of composition and sheet brass, each main condenser having a cooling surface of 6353 square feet. The circulating pumps are centrifugal and independent. There are four double-ended and two single-ended auxiliary steel boilers of the horizontal return fire-tube trip.

The main boilers will be about 15 feet outside diameter and 18 feet long, and the auxiliary single-ended boilers will be about 10 feet 2 inches diameter and 8½ feet long, all constructed for a working pressure of 160 pounds per square inch.

Each double-ended boiler will have eight corrugated furnace flues 3 feet internal diameter. The total heating surface of the main boilers is 17,460 square feet and grate surface 552 square feet.

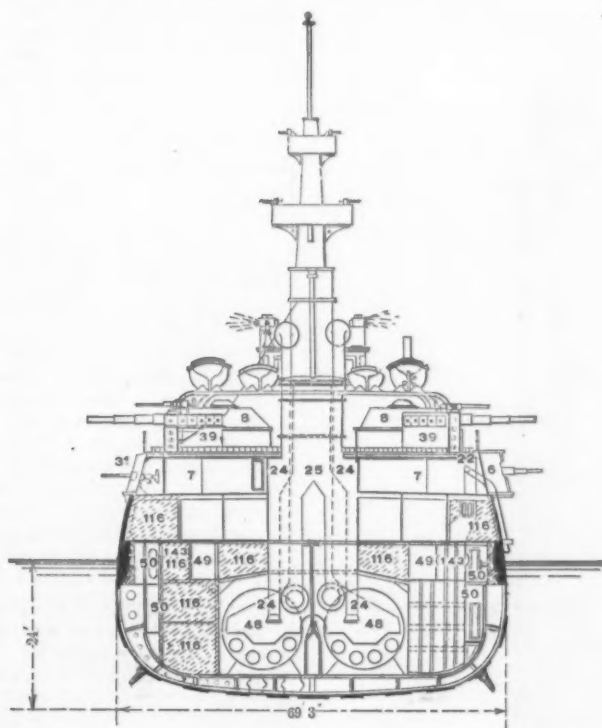
The auxiliary boilers have a grate surface of 64 square feet and a heating surface 1937 square feet.

### The Payne Boilers.

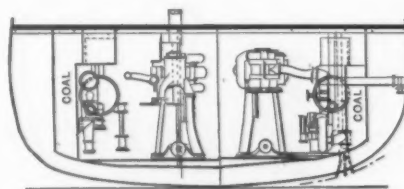
With the object of overcoming certain defects in the design of many types of vertical boilers, B. W. Payne & Sons of Elmira, N. Y., have brought out a new design shown in the accompanying illustration. They refer to the defects which they have aimed to remove in the following terms:

1. The certainty of burning, sooner or later, that portion of the upper ends of the tubes which lies between the water line and the upper tube sheet, for that portion of the tubes is unprotected by water and is exposed to intense heat; the result of which is that leakage ensues. Furthermore, all that portion of the tubes just mentioned serves merely as a superheating surface and is of no value as an evaporating surface.

2. They are not provided with sufficient openings to remove the sediment, scale and solid matter precipitated from the water.



Midship Section.



Section on Frame  
52, Looking Aft.

Section on Frame  
60, Looking Forward.

3. The want of suitable circulating devices and the violent ebullition on the lower portion of the tubes often cause the boiler to prime, in which state it is not only dangerous—as it is impossible to ascertain the exact amount of water in the boiler—but the water which is carried in the steam often wrecks the engine, and at the same time it is expensive to produce power from steam so generated and in such a state. The burning of the upper ends of the tubes is overcome by a submerged flue, but at a great expense to the efficiency of the boiler, as the evaporating surface and steam space are reduced and contracted respectively, but this type of boiler primes easily.

The features of the Payne design are the following: Midway between the outer tubes and the shell of the boiler is suspended a cylindrical baffle-plate—concentric with a boiler shell—which is made of No. 10 iron. This baffle-plate or apron, extends from about 1½ inches below the upper head to within about 10 inches of the bottom of the water leg of the boiler, and completely surrounding the tubes. Midway between this apron and the boiler shell is suspended from and joined to, the upper head a perforated plate which extends downward about 20 inches, encircling the apron. The effect produced by the apron and perforated plate is that when the boiler is subjected to heat from its furnace, the water surrounding the tubes ascends and is replaced by the cold water from the space between the apron and the boiler shell. As the heat increases, the circulation around the apron becomes more rapid, the water within the apron and around the tubes being forced to and over the top of the apron where the separation of water and steam takes place; the latter passing through the perforated plate to the space between the boiler shell and that plate, and the former descending to the water contained between the apron and boiler shell. The steam is drawn from the boiler through an opening in the shell near the upper head. The separation of the water and steam is thorough, as the water after passing over the apron has a

munition being sent to them inside the mast.

### Lighting, Drainage and Ventilation.

An electric plant will be placed on board to furnish all necessary electric energy for lighting the vessel, working the search lights, and supplying electric motors.

The drainage system is so arranged that any compartment can be pumped out by hand or steam, and the system of drainage has been much simplified. Powerful wrecking pumps are carried in the donkey-boiler rooms above the protective deck so that in case water enters the fire rooms below steam can still be utilized in pumping out the vessel.

A thorough system of ventilation is installed, and air can be forced into or drawn out of any part of the vessel by means of steam fans of great capacity, while special means are to be provided for such places as the donkey boiler, dynamo, and hydraulic pumping rooms, and for removing the gases from coal bunkers.

### Machinery.

The engines are twin screw of the vertical, triple-expansion, direct-acting, inverted-cylinder type, placed in water-tight compartments separated by bulkheads.

The coal bunkers will stow 1800 tons of coal, sufficient to carry the vessel at ten knots 16,000 miles.

### Where Building.

Bids were opened for these vessels October 1, 1890. The Wm. Cramp & Son Ship and Engine Building Company of Philadelphia, Pa., offered to build two vessels 12 feet longer than the ones proposed by the Department, the additional displacement to be utilized at the discretion of the Department, for \$3,020,000 each. Their bid was accepted, and the third vessel was awarded to the Union Iron Works of San Francisco, Cal., on similar modified plans, for \$3,180,000. All the changes due to an offer to build a larger vessel within the appropriation were made in the Bureau of Construction.

The longest bridge in the world is the Lion bridge near Sangang, in China. It extends 5½ miles over an area of the Yellow Sea, and is supported by 300 huge stone arches. The roadway is 70 feet above the water and is inclosed in an iron network. A marble lion 21 feet long rests on the crown of every pillar. The bridge was built at the command of the Emperor Kieng Long, who abdicated in 1796 on account of old age.

downward tendency, which with its greater weight, causes it to descend; while the steam readily passes through the perforated plate and is found in the outer space free from entrained water.

The water comes in contact with the tubes throughout their entire length, thereby increasing the heating surface nearly one-half, and correspondingly increasing the power of the boiler. As a space of about 10 inches intervenes between the bottom of the apron and the bottom of the water leg, there is a portion of the water leg which is not under the influence of the positive circulation, and which forms a receptacle for the solid matter precipitated from the water, so that the sediment, scale, &c., which is deposited can be removed easily, as the hand holes give easy access to the water leg.

One of the ordinary 6 horse-power vertical boilers supplied with these improve-

protect the companies as well. And so we have reciprocal provisions of both common and statute law, imposing conditions and granting privileges which apply peculiarly to the business of a common carrier.

It is well known that a common carrier must safely and expeditiously transport, for a reasonable consideration or price, any goods or commodities presented for carriage. He may not refuse to carry them, unless he is prevented from doing so by circumstances which he cannot control. But there has grown up from this proposition a mass of contract detail, out of which much litigation arises. One prolific source of trouble is the attempt to limit by contract the liability of the company for loss or damage to goods shipped. The liability of a railway company for the safety of goods intrusted to it is a liability arising by operation of law, and is not in any sense a liability created by con-

liability for the negligence of itself and its servants, with reference to goods and property entrusted to its care, and this liability cannot in any way be evaded or limited by contract.

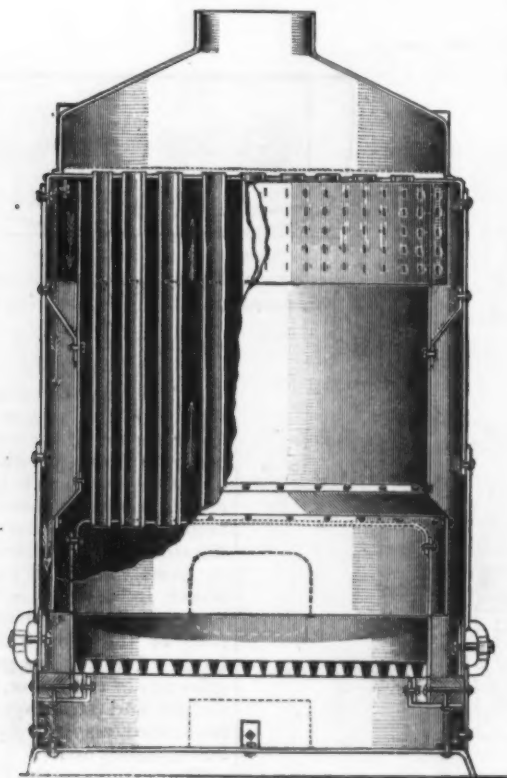
Of course liability beyond that fixed by law may be contracted away, but when it is it must be upon a good consideration. An agreement in a bill of lading operating in any way to the benefit of the carrier must rest upon a consideration which would sustain any contract. It is frequently sought to arrive at this by making a classification of liabilities, a certain rate being charged for one class and a different rate for another, the risk assumed by the company being proportioned to the rate charged. So far as it goes this is proper, but unless the shipper has the choice of two or more classes presented to him, and upon consideration accepts one, he is not bound by any condition attached to his bill of lading in derogation of the legal liabilities of the company. He has a right to assume that his shipment is made under the full liabilities of the company, and that the rate he is charged is the rate for that service, unless he has specific notice to the contrary, and the classification sheet and bill of lading are not conclusive notice to him to the contrary. He must be shown to have had specific notice that in consideration of a reduction in rate he was exempting the company from liability to a certain extent.

The liability of the carrier for the safety of property intrusted to it is ended by delivery. Delivery is the deposit of the goods at the place to which they are addressed, and is usually completed by notice to the consignee. Upon actual delivery the liability of the company terminates absolutely, and upon constructive delivery—that is, such notice as will end the carrier's liability—its relation changes from carrier to warehouseman. The liability of a warehouseman is for the safe care of goods against all perils which a prudent man would guard against, and the company is then held to the same care as one would naturally bestow upon the preservation of his own property.

Railroad companies are bound to the exercise of ordinary care and diligence, and this liability cannot, as a matter of public policy, be contracted away. The best and most comprehensive bill of lading that can be secured is a simple, unconditional receipt for the goods, and this includes with it all the rights which a shipper could secure under the most elaborate contract, and, except in cases of special contract, it carries with it all the immunity the company could secure. By the complicated system of billing and classification which obtains to day in railroad business, practical rights are lost and practical benefits surrendered. Less red tape and more common sense in railroading would tend to reduce litigation and simplify business transactions. The law of common carriage is so well settled that it constitutes a fixed and well-defined territory for these contracts to occupy, and there is no reason why they should not be restricted within those boundaries. Futile attempts to make contracts that do not contract are a prolific source of evil in this, one of the most important lines of commerce.

What is pronounced to be the finest Bessemer ore has been found in Winona County, Minn.

The Samuel L. Moore & Sons Company launched from their yard at Elizabethport, N. J., the iron ferryboat Cincinnati for the Pennsylvania Railroad Company, and the engines and boilers will be put in by the Pennsylvania shops at Hoboken.



THE PAYNE BOILER.

ments was recently connected with a Payne 10 horse-power vertical automatic engine, and in the test which ensued a steam pressure of 75 pounds per square inch was obtained in the boiler in 20 minutes from the time the fire was lighted. The engine was then started and the steam pressure raised to 100 pounds, after which the engine was run under a load of 12 horse-power for 10 consecutive hours.

#### Railroads and the Law.\*

The relations which exist between a railroad corporation and the public are of a peculiar nature, arising necessarily out of the fact that corporations of this class occupy a position in the commercial world which, unattended by legal restrictions, would give them the opportunity, at least, of practicing great wrongs upon the people. It is upon this fact that all sumptuary legislation and all the restricting principles of the common law rest for authority. And it follows that protecting the people as it does, the law must in turn

protect the companies as well. Being so, it cannot be limited by contract except as to such matters as may by contract be agreed upon, in addition to the liability fixed by law. For instance, the liability of a company as to time of delivery is, as a matter of law, discharged by delivery within a reasonable time. If by contract the parties agree upon delivery at a certain time the company has waived its right to a reasonable time for delivery and is held to its contract. But, on the other hand, an agreement in a bill of lading that the company will not be responsible for loss or damage resulting from its own negligence, or that of its servants, is void and does not bind the shipper. This seems, at first sight, to apply law one way on one case and reverse the principle in the other. But the reason is this: In the one case the company is not bound to make the stipulation; it need not make any agreement beyond the requirements of the law of carriers; while in the other case the shipper may find himself practically forced to make the agreement in order to get his goods shipped. The courts will not recognize or enforce any contract which abrogates in any way the common law liability of a common carrier. The carrier is charged absolutely with full

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### A New Bolton Heater.

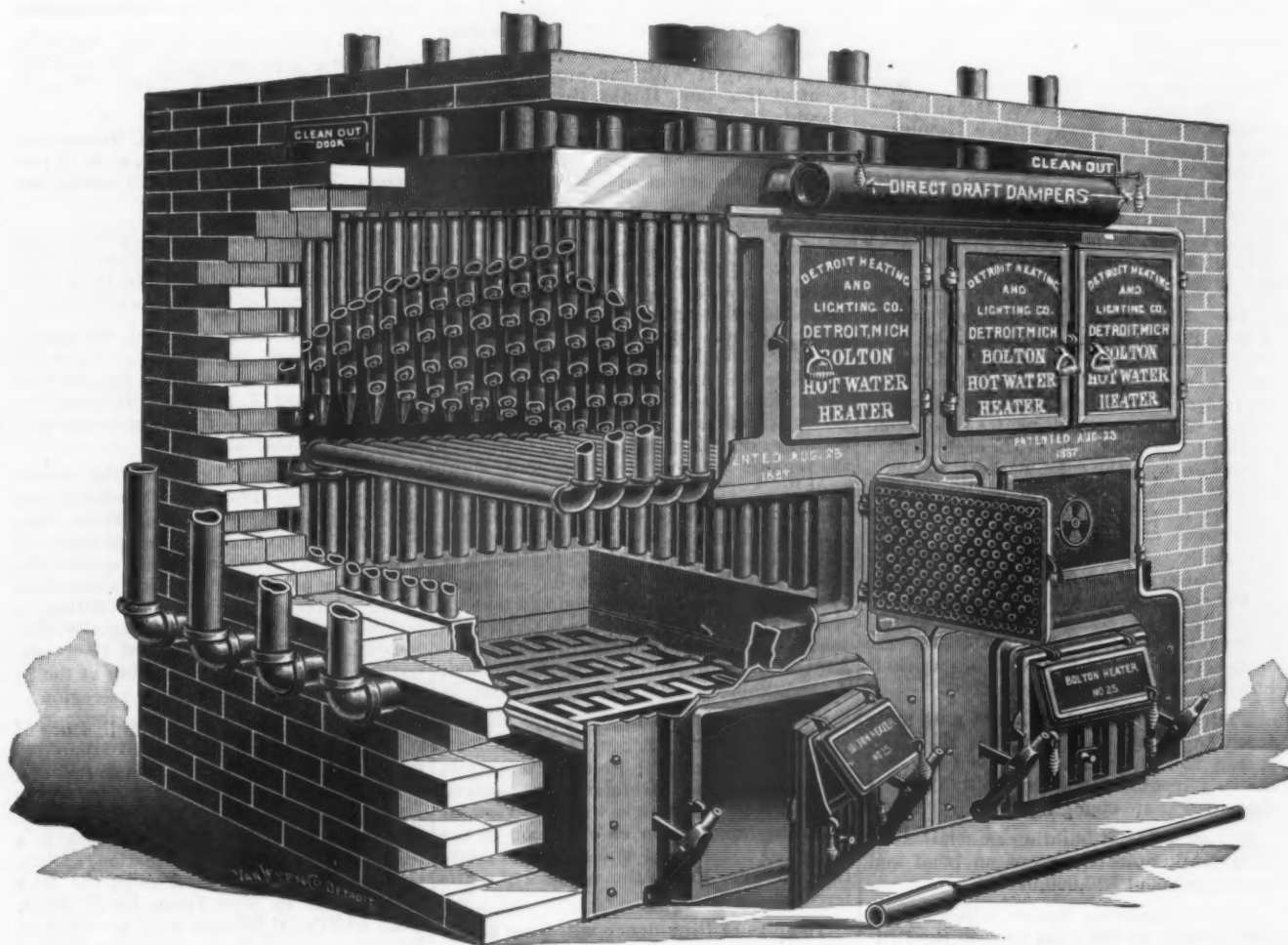
The Detroit Heating and Lighting Company, Detroit, Mich., feeling the need of a modification of the Bolton heater that would adapt it to large work, have put upon the market what they call their No. 20 series, one of which, known as No. 25, is illustrated in accompanying cut. This boiler, as will be seen, contains the special features of the regular Bolton heater, the top and bottom castings being connected by a row of wrought-iron pipes, while the intervening space above the fire pot is filled with pendant pipes extending down just over the fire. The advantages claimed for this construction are vertical circulation and an extensive heating surface, all of which is exposed to the direct action of the fire. The manufacturers also mention

**A Great Tunnel.**—The first sod was turned last week at Windsor, Ont., in connection with the construction of the monster Michigan Central tunnel between Detroit and Windsor under the Detroit River. This tunnel will have double tracks and will be several miles long. It will be constructed by an independent tunnel company, and will save much annoyance and loss of time to the public as well as the Michigan Central Company, which will then be able to do away with the cumbersome ferry-boats that are now a necessity on the Detroit River.

M. A. Hanna, the well-known iron merchant of Cleveland, Ohio, is having built for his own use a steel yacht, at the yards of the Globe Iron Works Company,

firm in New Britain, Conn., were called upon to supply 3000 knives. This firm made a hit by inscribing on each knife, under the firm name: "Cutlery to the American People." The silver plated forks were made by a firm in this city. The dinner was also thoroughly American. Cornelius N. Bliss presided, in the absence of Mr. Ammidown. To his right sat Vice-President Morton and Secretary of the Interior John W. Noble; to his left sat Wm. McKinley, Jr., and Senator Frank Hiscock.

Negotiations between the United States and the Government of Hayti, with the object of obtaining a coaling station at the Mole St. Nicholas, at the harbor of Port-au-Prince are said to have been unavailing. The presence of an American fleet in the



NEW BOLTON HEATER, MADE BY DETROIT HEATING AND LIGHTING COMPANY.

as a special merit the small amount of water in proportion to the fire surface. The first of the new series of boilers, No. 20, has a capacity for supplying 2300 square feet of radiating surface. The No. 25, which is the one illustrated, consists of two No. 20s united so as to form practically a double fire-pot boiler, with a capacity of 4500 square feet. The No. 30 consists of three No. 20s similarly combined, and has a capacity of 6500 square feet of radiation. An advantage claimed for this arrangement over the ordinary "twinning" boilers is that when only one fire pot is in use the heat may be made to pass over all the heating surface of the combined boilers by closing the direct-draft damper belonging to the fire box that is in use, and leaving open the damper above the unused fire box. The products of combustion, therefore, on their way to the chimney must pass among the pipes and over the entire heating surface of the boiler.

that city. The yacht will be 185 feet long, 25 feet beam and 14 feet deep, and every effort will be made to make her one of the finest afloat.

The annual banquet of The Protective Tariff League, held last week, was of a sumptuous character and graced by the presence of many prominent men. The occasion, it was intended, should be intensely American. Accordingly in the table furnishing the mills of Fall River and Paterson were well represented, as well as makers of cutlery, glass and porcelain. Secretary Wilbur F. Wakeman made it his special business to see that everything was of American origin. He had to have 10,000 plates and dishes made in the Trenton potteries. These included semi-porcelain, ironstone porcelain, and China, the idea being to have represented the principal pottery products of the country. He also had to have 3000 wine glasses of pressed glass made in Ohio. A

harbor was regarded as an act of intimidation. From an expression of the French Minister of Foreign Affairs, the French Government assumes practically a protectorate of the island.

It is reported that persons identified with the introduction of the Edison magnetic separator have, during the past few months, taken leases right and left on idle iron mines throughout New York, Pennsylvania and New Jersey.

The contract for the construction of a railroad bridge over the Arkansas River by the Little Rock Bridge and Terminal Railway Company has been awarded to the Union Bridge Company of Athens, Pa., for \$320,000.

The Mokta el Hadid Iron Ore Company of Algeria have paid a dividend of 8 per cent. for 1890, against 7 per cent. in 1889 and 6 per cent. in 1888.

## THE WEEK.

The East River Tunnel bill was vetoed by Governor Hill on the ground that the bill lacked careful preparation and he was not sure that it was a genuine undertaking.

The records of the Barge Office show that in April 60,458 immigrants had been landed at this port. This beats the record for any previous April. In April of last year 49,084 immigrants were landed.

The profits of transportation around New York City appear from the fact that the West Shore Railroad ferry across the North River this year will pay a rental of \$10,000 instead of \$2,750, as before.

Last winter 30,000 tons of phosphate were mined in the Ottawa district, which costs \$9 a ton laid down in Montreal and sells in Europe for \$30 to \$35 per ton.

Under the parcel-post treaty with foreign countries a new system of international commerce is growing rapidly. Treaties exist with Mexico, Jamaica, Barbados, the Bahamas, British Honduras, the Sandwich Islands, the Leeward Islands, Colombia, Costa Rica, Salvador and the Danish West India Islands, which provide that unsealed packages, not exceeding 11 pounds in weight and 3 feet 6 inches in length, may be sent in the mails for 12 cents a pound.

The bituminous coal miners acted wisely in refraining to strike May 1, as they intended. The National Board of Mine Workers concluded a season of several days at Columbus, Ohio, and issued a formal statement, which recites that owing to the use of the funds of the organization in maintaining the coke workers' strike in Pennsylvania, also to a defection on the part of miners in various sections, the eight-hour movement is deferred. The Executive Board, they say finally, have "determined to continue the fight in the coke regions with all our might and vigor." It is stated by friends of the miners that \$1,056,000 represents the wages that the 14,000 striking workers have lost in the past three months.

Factories in Pittsburgh are now more freely supplied with gas, since the warm season has lessened the demand for domestic purposes, and several mills that had discarded it are changing back to gas.

Mutual loan and building associations in New York State have out on bond and mortgage about \$20,000,000.

Some interesting figures, showing the cost of some of the guns used in the British land and sea service, are furnished by a recent Parliamentary return. From this it appears that nine 13½-inch guns have been issued to the navy at an average cost of \$55,905. The 10-inch guns cost \$28,480 each, and the 5-inch \$2840.

The War Department decides that the proposed Hudson River bridge must be 150 feet above high water, instead of 135, as originally contemplated.

A steel clipper bark of 1598 tons is to be built by Harrison Loring of Boston for the San Francisco and London grain trade. She will cost \$100,000.

Chilled steel vaults have been completed in Philadelphia, which increase the mint's capacity to \$200,000,000 in silver coin. In one vault there are \$33,000,000 in silver. The concrete floors rest on solid rock.

The only interoceanic railway in Mexico that is approaching completion is the Tehuantepec from the Gulf to the Pacific. The Interoceanic, having practically finished its line from Mexico to Vera Cruz, will now devote its energies to the

extension of its system through the State of Guerrero to Acapulco. The Monterey and Gulf and the Tampico branch of the Mexican Central are among the most recent railway enterprises in Northern States. Those roads built with American capital have not profited so much from the development of international exchanges as from local traffic. Trade between the two countries has been enlarged, but not so heavily as the projectors of the railways or their Government patrons anticipated.

The Montreal Herald says: "Of this we are certain, namely, that after October 12 next Mr. Blaine and President Harrison will be compelled to say exactly upon what terms, if any, they will consent to a treaty of reciprocal commerce with Canada."

Canadian railways are competing successfully with American railroads, restricted in their freight charges by the Interstate Commerce law, and Senator Cullom, chairman of the Senate Committee charged with the proper enforcement of this law, thinks that something should be done to put Canadian and American railroads on an equality, so far as the freight business is concerned. Delay in the action of the Treasury Department designed to prohibit the shipping in bond of merchandise through that country into this is regarded by Mr. Cullom as inflicting much injury. "The present evils, he says, cannot be wholly remedied by an order prohibiting the shipment in bond. Such an order would have the effect, doubtless, of leading shippers to patronize American lines to a greater extent than now, but the evils will not all be remedied until the roads in the two countries do business under the same laws as regards rates for a long and short haul."

London is having a miniature naval exhibition on an area of 15 acres, comprising a good-sized artificial lake. On the lake it is proposed to give each day a mimic battle between miniature ironclad men of war, including torpedo attacks, torpedo practice, submarine mining, fireworks, &c. All the large shipbuilders are represented. A lighthouse resembling solid stone is made of American expanded metal, covered with cement.

Dispatches from the French Embassy at Vienna state that Germany has opened negotiations with Russia with the view of arranging for Russian co-operation in the projected commercial union. Both countries can offer Russia the benefits of a differential tariff.

The city of Providence will issue \$500,000 bonds for an extension of the water works.

Beef in Chicago has advanced 33 per cent. within a month, owing to alleged scarcity and dearer corn.

The discharge of steam into the sewers of New York was summarily stopped by the Commissioner of Public Works, who cut about 50 connections with the steam company's pipes in the lower part of the city, after five days' notice.

A strong opposition to the re-election of Chief Arthur of the Brotherhood of Locomotive Engineers has been organized in St. Louis.

The two new White Star steamers just completed for the freight trade between New York and Liverpool are named the Tauric and Normanic, and are the largest afloat. In length the Tauric is 460 feet; in breadth, 49 feet; in depth, 35 feet, with a registered tonnage of about 5750 tons. Like the Majestic and Teutonic, she will be propelled by iron screws. Their capacity for cargo runs at 9800 tons. Their coal capacity is 700 tons and their speed

from 13½ to 14 knots. The capacity for carrying cattle is about 1200 head each, with space in refrigerators for 2400 quarters of dressed meat.

Peaches in Delaware promise a crop of 7,000,000 baskets, the largest ever grown, and growers expect to net \$1,000,000.

"More hoe and less Alliance is what the farmers of Kansas need to save their crops," says Chancellor Snow of the State University. Another says: "More plow and less picnics."

One of the effects of the disastrous insurrection in Chili is the bankruptcy of 30 business houses in Santiago. The insurgents claim to have established a provisional Government in eight provinces.

The Pennsylvania and New Jersey Central Railroad companies will build independent depots in Elizabeth, N. J., unless their plans respectively can be harmonized.

About 1200 men are building reservoirs and laying pipe to supply Newark with water from Pequannock River. The contract is \$6,000,000.

The Stevens Institute of Technology in Hoboken has 215 students, with 12 professors, 5 assistants and 1 instructing mechanic.

One hundred Whitehead torpedoes, such as recently proved so destructive in Chili, are in course of manufacture by the United States Government for the use of the navy.

The North German Lloyd Steamship Company earned net profits of £184,000 last year, against £380,000 in the previous year, and paid 7 per cent. dividend instead of 11½ per cent. The losses were made on the Australian line.

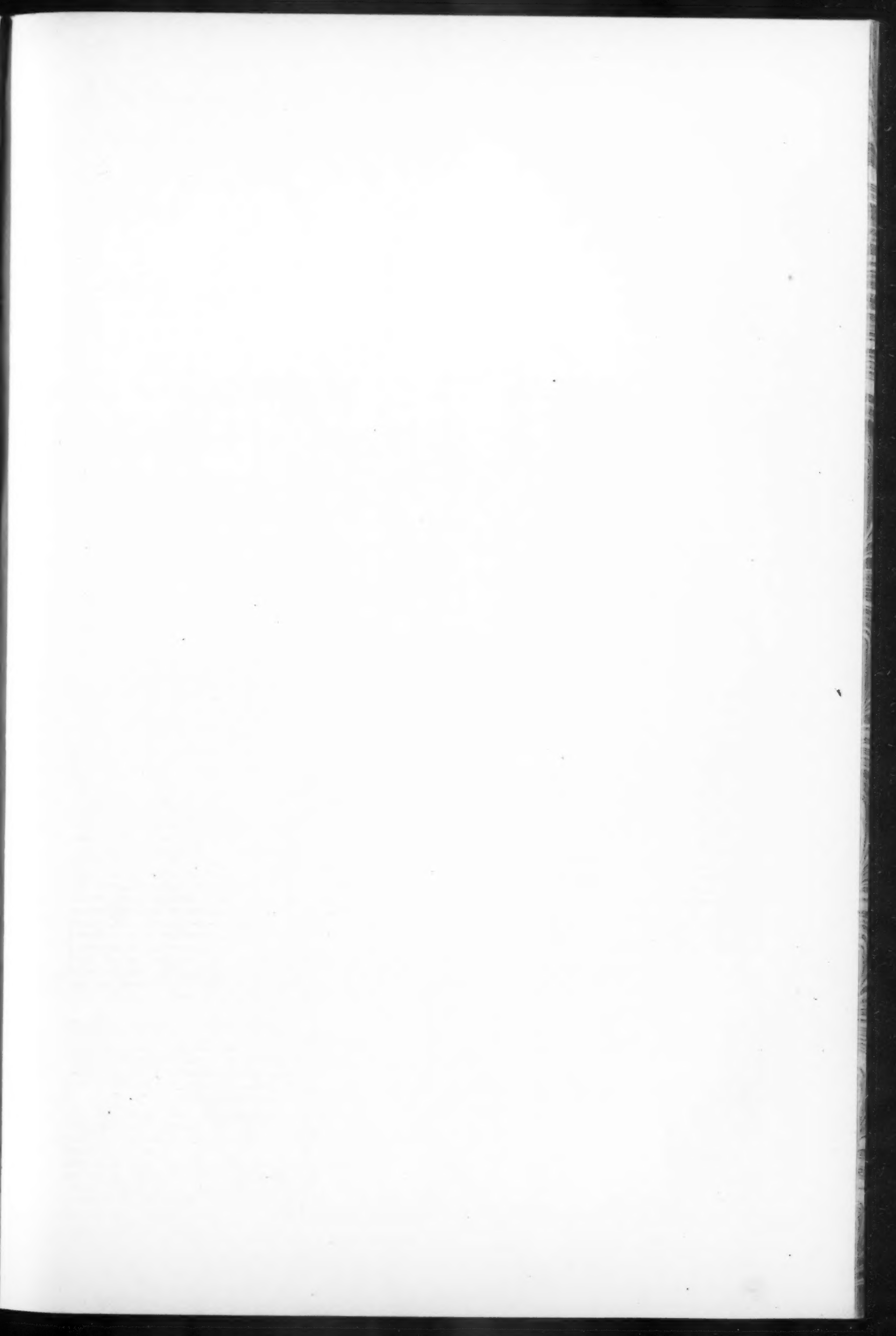
Herr John Most, the anarchist, delivered one of his tirades in Philadelphia on Sunday before a meeting of Poles, Russians and Hungarians, the purpose of which was to enter a protest against the conviction of the three Hungarians now under sentence of death for killing a fellow-workman at the Carnegie Works, Braddock, and also to record their protest against the recent killing of the 11 strikers in the Connellsville coke region.

The sudden collapse of a full score of short-term endowment organizations in Philadelphia has brought poverty and grief to thousands of small money savers within the last few days, and caused among a certain class of wage workers a feeling bordering on consternation. Charters were readily procured under the laws of the State of New Jersey for 25 cents. Four additional failures were recorded on Saturday, one of the concerns boasting of 70 branches, whose combined membership is about 7000. There is no requirement for the investigation of the real purposes of the applicants for charters, which enables the incorporators to use seals and officially authenticated certificates as a mantle to cloak the illegality of their business. The facilities thus provided have led to fraudulent practices, and victims are learning much from their experience.

"Kunst Kaffee" is the name of the new German coffee bean made of turnips and cocoa, which has been introduced from Hamburg and is said to be made in a spurious form by factories in Trenton, Philadelphia and Chicago. Wooden oats, altered from shoe pegs, suffer in comparison.

Newspapers in Brazil accuse the late provisional Government of making enormous land grants to immigrants, comprising an area nearly equal to that of Great Britain and Ireland, and of making railway grants on a prodigious scale. A leading Rio journal insists that the members of the late Government should be held responsible.





PLAN OF MAIN DECK.

EXTREME RANGE OF OUTSIDE GUN 150° EACH SIDE

EXTREME RANGE OF OUTSIDE GUN 120° EACH SIDE

[illegible]

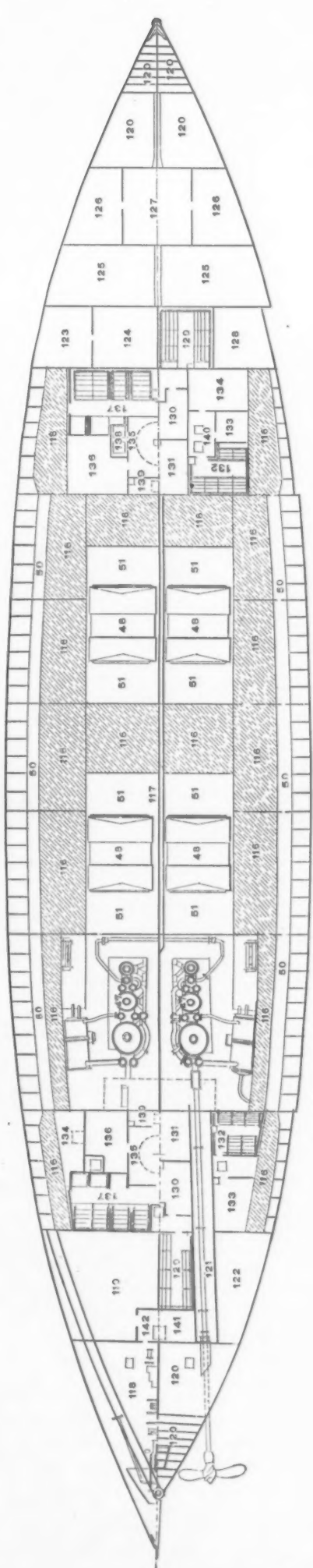
**References to Main Deck, Super-structure, Bridges, &c.**

1. Bridge.
2. Superstructure deck.
3. Road surface above 1.5 inches R. I. 12.

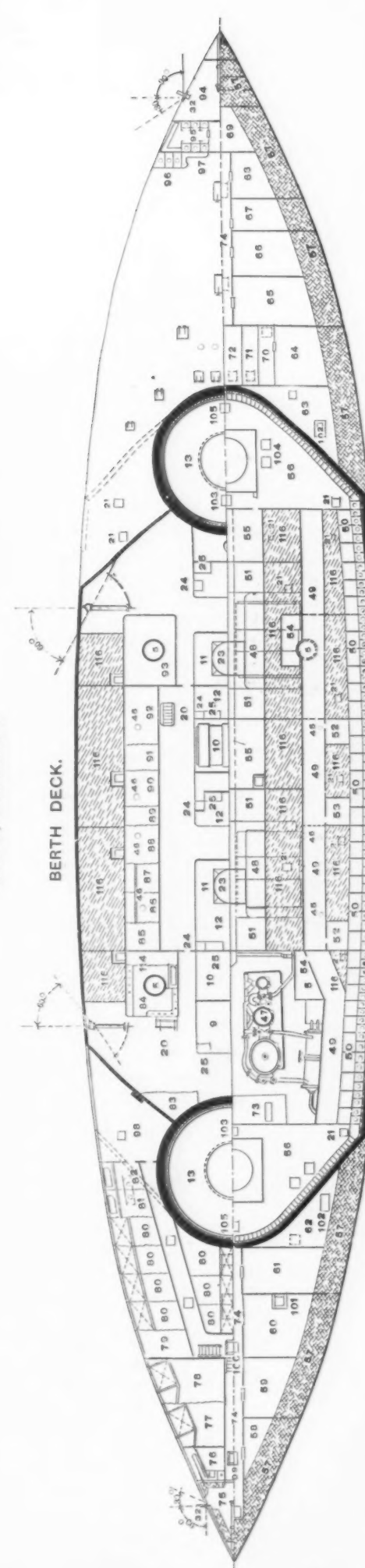


1. Torpedo tubes.
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6. 8-inch B. L. R. ammunition tubes, thickness 2 inches.
7. 6-inch B. L. R. spigons and inclosures, thickness 2 inches.
8. 8-inch B. L. R. spigons and inclosures, thickness 2 inches.
9. Engine inclosures.
10. Donkey boiler inclosures.
11. Chimney inclosures.
12. 14-inch B. L. R. and turrets.
13. Captains.
14. Captains.
15. Skylights.
16. Officers' companions to ward room, &c.
17. Captain's companions to cabin, &c.
18. W. c. and urinals, both sides.
19. Hatches to berth deck.
20. Coaling scuttles.
21. Coaling pipes.
22. Smoke pipes.
23. Ventilators.
24. Air ducts.
25. Upper top of military mast.
26. Surgeon's examining room.
27. Powder and torpedo room.
28. Crew's w. c. and urinals, both sides.
29. Crew's stores, both sides.
30. Crew's stores, both sides.
31. Junior officers' quarters.
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PLATFORMS.



HOLDS, MAGAZINES.



PROTECTIVE DECK.



UNITED STATES COAST-LINE BATTLE SHIPS INDIANA, MASSACHUSETTS AND OREGON.

Principal Dimensions—Length on Water Line, 348 ft.; Extreme Breadth, 69 ft. 3 in.; Draft, 24 ft.





The Iron Age

New York, Thursday, May 7, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

The Nail Trade.

The statistics of the production of nails in 1890, just published by the American Iron and Steel Association, are not flattering to the manufacturers of cut nails. According to the statement the total quantity of cut nails made in the entire country in 1890 was only 5,640,946 kegs, although in that year more nails were turned out than ever before in the history of the American nail trade. The output of cut nails has been declining steadily since 1886, when they attained their maximum. In that year 8,160,973 kegs of cut nails were turned out. The drop to 5,640,946 kegs in 1890 was a decline in the annual output of 2,520,027 kegs, or over 30 per cent. The shrinkage annually is shown in the following table:

Years.	Kegs of 100 pounds.
1886.....	8,160,973
1887.....	6,908,890
1888.....	6,493,591
1889.....	5,810,758
1890.....	5,640,946

During these years wire nails have been coming more and more into prominence. In 1886 they were not much of a factor, only 600,000 kegs having been turned out in that year. This production, however, was doubled in 1887, when 1,250,000 kegs are credited to this branch of the nail trade. In 1888 a further advance was made to 1,500,000 kegs, but the gain was hardly large enough to make wire nails seem very formidable as coming competitors. But in 1889 a decided jump was made to 2,435,000 kegs, and in 1890 the output reached 3,135,911 kegs, or more than half the production of cut nails in the same time. The following table of the total production of cut and wire nails shows how well the demand for nails has kept up during the years referred to, so that the falling off in the production of cut nails was not caused by a severe depression in the nail trade itself:

Years.	Kegs of 100 pounds.
1886.....	8,160,973
1887.....	8,158,870
1888.....	7,993,591
1889.....	8,245,758
1890.....	8,776,857

It is stated in the report of the American Iron and Steel Association that the output of wire nails in 1890 was credited to no less than 47 works. The production of 1891 will be still larger, because new works were started late in 1890 or early this year, while older wire-nail works are enlarging their factories and otherwise improving their facilities. With regard to cut-nail operations, however, the outlook is less encouraging. From a well-in-

formed representative of this branch of the nail trade we learn that there are today only about 26 factories now in the field for regular business. New England is credited with but 1; New Jersey 2; Pennsylvania 6, of which one is expected to be shortly removed to Virginia; Virginia 1; West Virginia 4; Ohio 5; Kentucky 1; Indiana 3; Missouri 1; Colorado 1; California 1. These factories have, all told, some 2876 machines. The total number of cut-nail factories in the entire country is 75, with 6066 machines. Less than half the capacity, therefore, appears to be active at present. Even in the famous Wheeling district there are but seven factories running now, and some of these are operated only spasmodically. It would be of interest to state the number of machines in the wire-nail factories, but for some reason the wire-nail manufacturers seem disinclined to report this information for publication, so that comparisons with cut-nail factories cannot be made on that basis.

Unremunerative prices is the reason assigned for the stoppage of a number of cut-nail factories. Nails are down to the level of cost or even below it except to the best equipped or most favorably located establishments, and cut-nail works are either rusting out in hopeless idleness or are being converted into other kinds of factories to make products in which competition is not so severe. Unremunerative prices, however, do not tell the whole story with cut nails, because prices are lower on wire nails than at any previous time and can hardly afford much of a profit, except to those works controlling in a large degree their own raw materials. Yet more wire-nail works are projected, and the capacity for producing wire nails goes on apace. The reason for this is, of course, that the wire-nail manufacturers feel sure of their hold on the nail trade and look forward to an increasing business in the future. A few of the cut-nail manufacturers exhibit the same assurance concerning future trade and are improving their equipment to keep in the race, but the great majority evidently feel that the cut-nail trade has seen its best days and that a reaction is not to be expected.

Dynamite Guns.

Dispatches from Washington to the daily press announce that Lieut. J. W. Graydon, formerly of the United States Navy, has offered to "turn into effective dynamite throwers all the smooth-bore cannon now mounted in our forts, and to do this within 30 days from the time of receiving the order." It is explained that he will employ a new gas-producing substance claimed to possess marked advantages as a propelling agent. The composition of this substance is not made public, but we are informed that it can be manufactured in grades giving a pressure of from 500 to 10,000 pounds per square inch—in other words, it can be made to yield any desired pressure.

It does not require a secret chemical

compound in order to obtain sufficient power behind the projectile. Compressed air has been successfully used for this purpose. But any scheme which proposes to employ any gas at comparatively low pressure in a gun built for powder is open to most serious objection. The principal obstacle is found in the short length of the gun when compared with the diameter of its bore. Lieutenant Zalinski found that the best results were obtained with a very long tube. He has repeatedly fired shells charged with dynamite from his pneumatic guns, and has obtained great accuracy by regulating the pressure according to the distance desired.

Four or five years ago Mr. Keely invited a good many people to Sandy Hook to witness the manifestations of power he would exhibit with his inter-atomic ether, as applied to the throwing of a bullet from a gun. From a small gun he fired 19 rounds, using as he said "Inter-atomic ether, vivified by the vibrations of a resonator." The velocity of one shot was measured and showed over 1900 feet per second. This was taken as demonstrating the wonderful power of the force he had claimed. And it served when viewed in connection with his motor as a sort of a *quad erat demonstrandum*.

A few days after the above experiment the writer made some researches to ascertain the propelling power of compressed air. An ordinary force pump worked by a couple of laborers pumped water into a coil of pipe at the upper end of which was fixed a tube 12 inches long, 1 inch in diameter, and provided at its lower end with a diaphragm. As the pump was worked the air in the pipe was compressed under this diaphragm, and when the pressure reached something over 1000 pounds the diaphragm broke, permitted the air to escape and discharged the bullet resting on the upper side of the diaphragm. With a pipe 1 foot long the bullet—a 1-inch lead ball fitting the tube accurately—failed to penetrate 2 inches of plank. When the barrel of "the gun" was lengthened to 30 inches—the length of Mr. Keely's—the bullet went through 4 inches of board, out through the skylight and to parts unknown. A long tube is absolutely necessary in order to get a useful effect. This can be proved by any one who will blow a plug through a paper tube 4 inches long and then through one 20 inches long.

The United States now has a boat armed with three pneumatic dynamite guns, from which a charge of dynamite has never yet been thrown and from which dynamite charges, in all probability, never will be thrown. Dynamite is by far the most treacherous explosive known; it is impossible to foretell with any degree of certainty what it will do. Fulminate of mercury is pleasanter to handle, since it can be relied upon to "go off" every time under the same conditions. This characteristic of dynamite renders it about as dangerous to the handler as to the enemy. If it should be necessary to employ the so-called dynamite guns it is probable that gun cotton will be the explosive.

### English Iron Masters on Fast Driving.

English blast-furnace managers find it very difficult to accept as advantageous the American system of rapid driving. It is natural that our methods in this respect, differing so widely from their own, should have been the subject of some study to the men who visited this country last year. It is reasonable to expect, too, that a larger number of Englishmen can now appreciate the conditions which led to the development of our system. Americans take some interest in their opinions though they will deny them the right to be their judges. If they imitate us we shall appreciate the compliment. If they condemn our methods as extravagant, or as inapplicable to their own conditions, American iron makers will go on in the path chosen. The subject has been recently discussed in an animated manner by members of the Cleveland Institution of Engineers. Since the iron masters of the Middlesborough district claim to be the most progressive in England their views are of interest. The occasion which brought them out was the reading of a paper by William Hawdon of Middlesborough. He attempts to prove in pounds, shillings and pence that the English method is more economical. His first point is that two English furnaces can do what one American furnace produces, but that really the only difference in cost of plant is the one extra stack, since the same amount of stock room for materials, steam power and blowing power is required. The extra cost in the case of two furnaces is £7500. But with one American furnace there is the extra cost of two relinings at £2500 each, or £5000, and the loss of working during 14 weeks, leaving a balance of £2500 in favor of American practice, while there is against it the greater strain on the machinery and furnace plant, and finally the greater fuel consumption, upon which the Englishmen place so much weight. We quote Mr. Hawdon in full on this point:

Taking the figures given by Mr. Gayley, which are the only authentic figures I can refer to, we find that the average consumption of coke is 2375 pounds = 21 hundredweight 0 quarters 23 pounds, say 21½ hundredweight for simplicity. Compared with the 50 per cent. Rubio ore, the 63 per cent. American ore would require, at the least calculation, 1 hundredweight less coke per ton to smelt it. Therefore, had they been smelting a 50 per cent. ore we may conclude that they would have used 21½ hundredweight + 1 hundredweight = 22½ hundredweight coke per ton of iron. In England we do this, as I have stated, with 19 hundredweight and less. Thus 22½ - 19 = 3½ hundredweight represents the difference. But supposing we go back only five years, giving them the advantage of improvements over the first five years, we have from the last four figures an average of 19 hundredweight of coke per ton of pig, the same as our consumption, but the difference of ore gives us the advantage of 1 hundredweight coke per ton. Take coke at 7d per hundredweight as about representing the average cost over a series of years, we have, when making the 2000 tons per week, 2000 × 52 = 104,000 tons of iron in one year, which at 7d per ton = £3033. 6/8, which more than balances the difference of £2500 before referred to, leaving five years × £3033 = £15,165 to the good of the two furnace practice as against the one. And from what

I saw of American practice I should say 10 hundredweight is not below the average consumption in the Northern States, clearly proving, to my mind, that our English practice is superior to that of America, with all their hard driving.

The figures of James Gayley of the Edgar Thomson Works, to which he refers, are the following:

Year in which furnace commenced in blast.	Cubical capacity. Cubic feet.	Average daily output. Tons.	Average consumption of coke per ton of iron. Pounds.
1880 .....	17,868	132	2850
1882 .....	21,473	180	2570
1885 .....	16,680	178	2677
1885 .....	18,950	304	2250
1887 .....	17,230	198	2320
1886 .....	19,870	244	2150
1889 .....	18,200	311	1862

In his first computation Mr. Hawdon actually takes the average of the whole series, and even in his second he calmly ignores the progress made since 1885 and the teachings of the series of two figures, the daily output and the coke consumption. Mr. Gayley's paper, from which the figures quoted are taken, distinctly says: "In the period covered by the last decade there are three stages in the development of American blast-furnace practice that might be mentioned—1, in 1880, the introduction of rapid driving, with its large outputs and high fuel consumption; 2, in 1885, the production of an equally large amount of iron with a low fuel consumption by slow driving, and, 3, in 1890, the production of nearly double that quantity of iron, on a low fuel consumption, through rapid driving."

Sir Lowthian Bell's frank acknowledgment is in curious contrast with this crude criticism. He has clearly stated that in his opinion the extraordinary record of the Edgar Thomson was not due to the character of the coke or the richness of the ores, but he has at the same time questioned whether similar methods applied to the materials of the Cleveland district would yield similar results.

There was some discussion on the relative merits of building special blast mains for each furnace or of coupling up all the blowing engines for a plant of more than one furnace to one general blast main, as is the usual English practice. Giers and others spoke emphatically in favor of the latter system.

All the speakers condemned unhesitatingly the American system of cooling boshes and hearth.

The only one who appears to have sided with the Americans is C. J. Bayley, the president of the society, who stated that the Cochranes of Middlesborough are making 1000 tons of Cleveland iron per furnace per week with 19 to 20 hundredweight of coke, whereas 23½ is the average of the district per ton of iron made. He compared the new development to that which followed the introduction of triple-expansion engines into marine engineering. However one-sided the controversy may be in England now, it is probable that

much adverse criticism will be silenced when the "American furnace" recently started at one of the plants has made its record.

### PERSONAL.

John McLauchlan of Chicago, Western manager for Andrews Bros. Company of Youngstown, Ohio, started for the Pacific Coast on the 28th ult., to be absent a month or six weeks. He will visit the leading cities on the Pacific Slope and will combine business with pleasure.

Jos. D. Weeks has severed his editorial connection with the *Virginia Manufacturer*. He is succeeded by John C. Gerndt.

John M. Hartman, of Taws & Hartman, Philadelphia, has returned from a fourteen-months' trip in Egypt, Syria and the East.

Among the persons proposed for membership of the Iron and Steel Institute are the following Americans: Joseph M. Butler, Jr., Youngstown, Ohio; E. M. Cole, New York; Albert Curbin, Pittsburgh; E. C. Darley, Pittsburgh; Thomas Deegan, Pittsburgh; Geo. A. Duncan, Pottstown; T. A. Griffin, Chicago; J. Hartschorn, Pottstown; F. N. Hoffstott, Pittsburgh; C. Kirchhoff, New York; J. Lodge, South Pittsburg, Tenn.; H. W. McKnight, Pittsburgh; Henry A. Noble, Seattle, Wash.; T. W. Robinson, Milwaukee, Wis.; J. L. Stevenson, Pittsburgh.

William H. Burr, recently general manager of the Phoenix Bridge Company, has severed his connection with that company. He has purchased a considerable interest in the firm of Sooy Smith & Co., contracting engineers, New York, and after June 1 will become vice-president of the company.

Andrew Carnegie has been elected a member of the British Economic Association, a society composed of about 80 of the leading economists of Europe. Mr. Goschen, Chancellor of the Exchequer, is president, and Mr. Gladstone, Harold Rogers and other economists are on the roll of membership. Mr. Carnegie is the first American to be invited to join the association.

F. I. Freeman, formerly president and general manager of Etna Machine Company of Warren, Ohio, is now general superintendent of the entire plant of the Totten & Hogg Iron and Steel Foundry Company, Pittsburgh, taking the place of Robert C. Totten, who resigned last month.

C. H. Odell, the New York representative of the Edgar Thomson Steel Works, has returned in restored health from a prolonged stay in the South.

The "Manometer" recently placed on the Eiffel Tower, being 300 meters in length, is capable of measuring a pressure of nearly 400 atmospheres. The tube, which is of mild steel and is 4 mm. in internal diameter, has been rolled out of old Chassepot rifle barrels. On this tube, at intervals, are placed cocks which lead into vertical graduated glass tubes, whose upper ends are connected by india rubber joints with another down pipe leading to the receptacle for the mercury at the base of the tower, so that if one of the cocks should by accident be left open the mercury will not be wasted. M. Louis Cailletet, Member of the Institute, under whose direction the installation was made, hopes to be able to carry out some interesting experiments, which hitherto the want of a sufficiently long column has rendered impossible.



## OBITUARY.

## CHARLES PRATT.

Charles Pratt, president of the Pratt Mfg. Company, an organization identified with the Standard Oil interests, died suddenly at his office in the Standard Oil Company's building on Monday evening, of heart disease. Charles Pratt has become better known as one of the most liberal patrons of education than as one of the Standard Oil millionaires. In him Brooklyn loses her greatest public benefactor and the cause of technical and industrial education its most generous friend. The Pratt Institute, which he founded and developed into the finest training school in the world, is a fitting monument to his memory. Mr. Pratt was of humble origin and a plain man of the people. Even after he accumulated immense wealth he was a man of simple tastes and unostentatious living. He was born on October 2, 1830, at Watertown, Mass. His father was a hard-working cabinetmaker, and Charles was one of ten children. When only ten years old he left home to work on a farm near Boston. Later he learned the machinist's trade, and he earned his first dollar at the bench. He accumulated a little money, and went to Boston when he was 17 years old. "I found out," he said afterward, "that I didn't know enough for Boston, so I went to the Wilbraham Academy for a year, and I managed to live on a dollar a week while I studied." Then he went back to Boston and got employment in a paint and oil house. His business career was an uninterrupted series of successes. In 1857 he moved to Brooklyn and became junior partner in the New York oil firm of Devoe, Reynolds & Pratt. A few years later he went into business for himself, and established an astral oil works at the foot of North Twelfth street, Williamsburg. When the minor oil firms were absorbed by the Standard Oil Company Mr. Pratt became associated with Messrs. Rockefeller and Flagler in the deal. The enterprise soon made him many times a millionaire, and nearly 1000 men have been constantly employed at his refinery.

For the last half dozen years Mr. Pratt gave his principal attention to the development of his comprehensive ideas in technical and industrial education. He built the institution which bears his name, and gradually he has enlarged and elaborated its scope and plans. He spent more than \$1,000,000 in its development, and his intimate associates know that he had plans in mind which called for the expenditure of an immense sum in addition. Whether his untimely death will cut off this great benefaction it is impossible now to say. A part of the plan called for the erection of new buildings within a year or two that would have cost more than a million.

## The Westinghouse Interests.

The seventh annual meeting of the stockholders of the Philadelphia Natural Gas Company of Pittsburgh was held in the Westinghouse Building, in that city, on the afternoon of the 4th inst. George Westinghouse, president of the company, occupied the chair. The first business transacted was the reading of the annual report of the Board of Directors for the year ending March 31, 1891. At the opening of this paper it was announced that the board believes that the statement of the company's operations for the past year, showing a net profit of \$1,148,163.84, after charging \$270,000 of the cost of the Bellevue line and other important items in operating expense, will prove satisfactory to the stockholders. The board believes that the rates obtainable for gas will enable the company to continue to

make large net profits. The amount of expenses during the year on the laying of new lines and taking up and relaying of the old lines was \$1,039,022.17. And notwithstanding these heavy expenditures, the net debt at the present time, as can be seen by the statement, is only \$502,540.52. The total amount permanently charged to capital account during the year was \$245,580.11, increasing the total number of parts under the agreement with the Chartiers Company to 116, of which the Philadelphia Company are entitled to 86 and the Chartiers Company to 30. It was further stated that the decreased use of gas by domestic consumers during the summer months will enable the company to take on a large number of manufacturing establishments. It was also stated that only a moderate increase in the size of the plant will be required for the next 12 months, for the reason that a large amount of work in that line was done last year. The report of John Caldwell, treasurer of the company, was then read, and showed its financial condition to be as follows:

ASSETS.	
Cash.....	\$52,409.24
Accounts and bills receivable.....	665,251.31
Sundry gas and other stocks.....	366,920.00
Gas wells.....	483,065.00
Pipe lines (including \$652,434.01 standing charged to Bellevue non lines, which is being decreased at the rate of \$30,000 per month and charged to expenses).....	6,322,656.29
Service lines.....	18,674.42
Telephone lines.....	35,804.57
Buildings.....	16,843.70
Charters, franchises, patents, &c.....	521,873.55
Real estate.....	97,210.81
Gas rights.....	183,543.67
Gas leases.....	339,288.11
Rights of way.....	120,945.34
Regulators, meters, &c.....	603,330.32
Material on hand.....	175,365.43
Tools.....	47,345.24
Office furniture and fixtures.....	16,755.60
Horses and vehicles.....	3,752.05
Betterments to leased companies (to be refunded at expiration of contracts).....	14,086.41
Total assets.....	\$10,087,121.07

LIABILITIES.	
Capital stock paid in.....	\$7,500,000.00
Accounts payable.....	114,032.16
Security deposits.....	36,115.78
Collateral bond account (being balance due on account of Bellevue non lines and Murraysville 26-inch line, and being paid off under agreement at the rate of \$30,000 per month).....	528,000.00
Bills payable.....	428,973.13
Bonded debt.....	480,000.00

UNDIVIDED PROFITS.	
Balance April 1, 1890.....	\$1,982,307.85
Add net earnings for year ending March 31, 1891.....	1,148,163.84
Total.....	\$3,130,531.69
Less dividends paid.....	\$450,000.00
Less amount charged to depreciation on charters, franchises, patents, &c. gas rights and gas leases.....	1,058,000.87
Less sundry losses.....	22,400.82
	2,130,531.69

Undivided profits—net.....	\$1,000,000.00
Total liabilities.....	\$10,087,121.07

EXPENSES AND EARNINGS.	
Total operating expenses.....	\$1,614,445.28
Interest, discount and commissions.....	73,999.96
Taxes—Capital stock.....	32,975.50
Taxes—Sundry.....	3,756.08
Total expenses.....	\$1,725,175.82
Gross earnings.....	\$2,875,330.66
Gross expenses.....	1,725,175.82
Net earnings.....	\$1,148,163.84
Net earnings for year ending March 31, 1891 (15.31 per cent. of capital).....	\$1,148,163.84
Less dividends paid.....	450,000.00
Balance—Surplus.....	\$698,163.84

The number of producing wells operated by the company April 1, 1891, was 214, and the total miles of pipe line 698, or 4,682,886 feet. The number of producing wells drilled during the year was 26.

The election of president and board of directors to serve during the year was also held, with the following results: Geo. Westinghouse, president; and a board of directors as follows: Robert Pitcairn, John Caldwell, A. Groetzing, James A. Chambers, Calvin Wells, H. Sellers McKee, E. M. Ferguson. The board of directors organized by electing the following officers: Geo. Westinghouse, president; A. M. Byers, vice-president; G. H. Browne, general manager; W. D. Uptegraft, secretary; Jno. Caldwell, treasurer; E. S. Pearson, assistant treasurer; Mathew Bigger, general contracting agent; and Allen Marthens, auditor.

The annual meeting of the Westinghouse Electric and Mfg. Company was to have been held in Pittsburgh on Monday, the 4th inst., but it was postponed until Monday, May 18, on account of the negotiations for the floating of the preferred stock being incomplete. The following statement was issued to the stockholders:

"The annual meeting of the stockholders of this company was called to-day in compliance with the by-laws, which fix this day for the annual meeting. The directors at a meeting held this morning adopted the following resolution:

"It is moved that in view of the fact that in the opinion of this board it is not advisable to announce at this time the details of the plan for placing the preferred stock of this company, liquidating its floating debt and securing working capital, which has been substantially completed, the stockholders be requested to adjourn the annual meeting called to day to Monday, May 18, 1891, at 10 o'clock in the forenoon in room 64, Westinghouse Building, Pittsburgh, Pa."

"In the negotiations which have been so nearly concluded, the interests of the present stockholders have received special consideration, with a view of giving a permanent value to their stock. The business of the company has been continued without interruption, and although with a lesser volume than for the same period last year, the net results have been better. The orders in hand and those being received are equal to the capacity of the works, and it is expected that the arrangements which have been made will soon put the works of the company in full operation. A large reduction in expenses has been effected, by reason of which and a more conservative business policy the affairs of the company have been steadily improving since the 1st of January."

The engines and boilers of the Inman Company's steamer City of Paris, which were injured by an explosion, have an important improvement. To insure absolute safety, the company have had fitted to the engines of their steamers a contrivance which automatically stops the engines if they go beyond their normal speed. A test of this appliance was made, and when the engines had attained a rate of speed agreed on previously, the checking apparatus quickly and effectively did the work claimed for it. An important alteration has been made in relation to the boilers. Formerly they were worked by the closed stoke-hole system, with a forced draft. Now they are fitted with Howden's arrangement, the principal feature of which is that the air is heated. The patentee has the greatest confidence that by this new arrangement the supply of steam will be more steadily maintained and the power and average speed increased, thus insuring a quicker passage.

The American Pig Iron Storage Warrant Company have sent out a leaflet dealing with the experience thus far obtained with the warrant system and with the outlook in the near future.

Decreasing Indebtedness.

The Census Bureau has finally completed its bulletin on the net indebtedness of the States, counties and municipalities in this country in 1890. Some of the statistics have already been given by us, showing a very material improvement, and the complete returns are even more satisfactory. The local debts—that is, the net debts less cash in the treasury—are finally announced as follows:

State.....	\$132,336,689
County.....	118,224,885
Municipal.....	455,373,940
Total.....	\$702,935,514

It will be seen that the municipal debts constitute more than half the total local indebtedness of the country, being four times those of the counties, and nearly three and a half times as large as those of the States. It is here that the greatest weakness in American institutions prevails—our bad municipal governments and the tendency to pile heavy debts on the cities.

The previous two decades, 1860 to 1890, were debt creating epochs, in which bonds were issued by States, counties and cities with utter disregard of the future. It is gratifying to note that this recklessness is now apparently at an end. In the course of the last ten years the States have decreased their debts \$72,163,985, the counties \$8,279,700 and the municipalities \$45,777,019, making a total decrease of \$126,670,704, or nearly 16 per cent. The local debt has dropped from \$16.42 per capita to \$11.06. At the same time, there has been a material reduction in the United States debt to \$15.38 per capita, making a total debt, national and local, of \$26.44, which is lower than that of nearly any civilized country on the globe and but little more than half what it was ten years ago. When the great development of the country during these ten years is taken into consideration, the cities built up, the improvements of all kinds made, it seems wonderful that all this should be accomplished and the country at the same time so greatly reduce its indebtedness.

Spanish Competition in the English Iron Trade.

There are more shipments of crude iron arranged for to be sent from Spain to the North of England, as is shown by the lists of charters, and the fact is suggestive of a growing competition in the pig-iron trade under peculiar conditions. Hematite iron is largely smelted in this country from Spanish ores, so that the first sight it would seem that the importation is merely in the form of pig iron instead of being in the ore. But the iron made in Spain is smelted with British fuel, and thus any competition that there is resolves itself into the question whether it is cheaper to carry the iron ore to the coal or the coal to the iron ore. It is a proof of how cheaply sea carriage is effected when it is stated that the cost of the carriage of the coke is at the rate of perhaps 6 shillings per ton from the port to the port, while the iron ore costs perhaps 5 shillings 4 pence per ton for the sea carriage. In either case the land carriage is to be added, but it is to be remembered that our smelters have to pay for a larger tonnage of ore for a given quantity of pig iron than the Spanish smelters have for coke. The importations are small, too, of pig to the quantity that is smelted here; but, still, the fact that it is possible to send iron from Spain into this country is one of the proofs that there is and will be a growing international competition in the crude-iron trade. Cheap labor and low

royalties in Spain enable that country to produce at a very low cost, even when it is remembered that the fuel is carried long distances; and if this country is to retain its ascendancy in the iron trade it will have to turn its attention to some of the elements in the cost of production that have scarcely been touched of recent years. There are now experiments being made as to the enlargement of the output from the blast furnaces that may tend in the right direction, and it is probable that the result of legislation now in progress may help to reduce the cost of land transit, but there are other elements in the cost that are little touched, the elements of royalty, of local taxation, as well as the very important one of wages. The cost of the coke, too, is being brought down, though perhaps the fall has been less rapid than that of the decrease in the price of the iron; but any gain from this source is one that would be common both to the home and the foreign smelter who draws his fuel supplies from us. On the other hand, any reduction of the cost of producing iron ore in Spain would benefit us, and the prices in the market of the stocks of those British companies which own mines in Spain show that they find the adventure very lucrative. The difficulty is one that is more of the future than of the present, for the production of pig iron in Spain is not yet on any scale of magnitude, but it will enlarge as time passes on, and it will interfere with our sales in non-producing countries more than with the consumption in our own. But the fact that the country of the Dons is able to send pig iron, even to the extent of a few thousand tons, to this country is one that is worth reflecting on, and one that will claim increasingly the attention of producers here.—*London Engineer.*

The Modulus of Elasticity.

William Metcalf of Pittsburgh, probably our highest authority on steel, in a discussion of a paper by Prof. R. H. Thurston of Sibley College on the "Permanent Effects of Strain in Metals," spoke as follows:

Professor Thurston mentions the modulus of elasticity; I have a great respect for the modulus of elasticity, because since I worked it out as a student in Troy I never understood its application in formulas involving all manner of strains; for instance, a friend of mine had me provide him with spring bars of steel, mild, medium and high; of each lot some were left as rolled, some were annealed, some hardened and tempered. They were sent to the Government testing machine at Watertown and tested, when it was found that they all had almost identically the same modulus of elasticity; therefore, to make a good spring you have only to get your bar of the right size by means of your formula, which is based on the modulus of elasticity, and then the spring will be just the same whether the bar be mild or high, tempered, untempered, or even annealed. When the specifications for springs were issued finally they required unusually high steel, well tempered. When asked what had become of the modulus, the reply was, "Oh, we found a great reserve of elastic strength in the high tempered steel."

One more point, a practical one: If you are using cold rolled or cold-drawn steel, it would be well to file a nick in an occasional piece and break it transversely; if the fracture shows a distinct dark or black core, reject the steel; it has been crushed in the rolling or drawing. This black is distinct, and should not be confused with the general dark cast or shade that is often noticed on mild and very good steel. The dark or black part produced by overrolling or overdrawing is so dis-

tinct from the true grayish blue of steel, that the shop name for it is the "black heart."

Southern Iron Freights.

The Southern Railway and Steamship Association have issued Joint Manufactured Iron Tariff No. 11, taking effect May 17. The rates on architectural iron to some of the more prominent points are as follows, per 100 pounds for carload lots of not less than 30,000 pounds:

To	From		
	Birmingham, Ala.	Chattanooga, Tenn.	Anniston, Ala.
Akron, Ohio.....	23.	22.	23.
Allegheny, Pa.....	23.	22.	23.
Aurora, Ill.....	16.5	15.5	16.5
Bellaire, Ohio.....	23.	22.	23.
Chicago, Ill.....	23.	22.	23.
Cincinnati, Ohio.....	15.	12.	15.
Cleveland, Ohio.....	23.	22.	23.
Columbus, Ohio.....	21.	20.	21.
Dayton, Ohio.....	19.5	18.5	19.5
Detroit, Mich.....	24.	23.	24.
East St. Louis, Ill.....	17.	16.	17.
Indianapolis, Ind.....	20.	19.	20.
Louisville, Ky.....	13.	12.	15.
Memphis, Tenn.....	11.	11.	11.
Pittsburgh, Pa.....	23.	22.	23.
Springfield, Ill.....	25.	24.	26.
Springfield, Ohio.....	20.5	19.5	20.5
Steubenville, Ohio.....	23.	22.	23.
St. Louis, Mo.....	17.	16.	17.
Terre Haute, Ind.....	21.	20.	22.
Zanesville, Ohio.....	22.	21.	22.

The rates on cast-iron pipe and muck or puddle bars and iron and steel blooms and billets are as follows, the former per ton of 2000 pounds in carloads of not less than 15 tons, and the latter per ton of 2240 pounds in carloads of not less than 17½ tons:

To	Cast-iron pipe.			Muck or puddle bars, iron and steel blooms and billets.		
	From			From		
	Birmingham, Ala.	Chattanooga, Tenn.	Anniston, Ala.	Birmingham, Ala.	Chattanooga, Tenn.	Anniston, Ala.
Akron, Ohio.....	\$3.85	\$3.60	\$3.85	\$3.85	\$3.85	\$3.85
Allegheny, Pa.....	4.25	4.00	4.25	4.40	4.40	4.40
Atchison, Kan.....	5.00	5.00	5.00	5.00	5.00	5.00
Aurora, Ill.....	4.00	3.75	4.00	4.10	3.85	4.05
Aurora, Ind.....	3.65	3.40	3.90	3.25	2.75	3.25
Bridgeport, Ohio.....	4.25	4.00	4.25	4.40	3.90	4.40
Chicago, Ill.....	4.00	3.75	4.00	3.85	3.60	4.10
Cincinnati, Ohio.....	2.75	2.25	2.75	2.75	2.25	2.75
Cleveland, Ohio.....	3.85	3.60	3.85	3.85	3.85	3.85
Columbus, Ohio.....	3.40	3.15	3.40	3.35	2.85	3.35
Council Bluffs, Iowa.....	5.50	5.50	5.50	5.84	5.84	5.84
Dayton, Ohio.....	3.05	2.80	3.05	3.40	2.90	3.40
Detroit, Mich.....	3.90	3.65	3.90	3.85	3.60	4.10
East St. Louis, Ill.....	3.25	3.00	3.25	3.25	3.00	3.25
Evansville, Ind.....	2.75	2.50	3.00	2.75	2.50	3.00
Fort Wayne, Ind.....	3.65	3.40	3.65	3.60	3.35	3.85
Kansas City, Mo.....	5.00	5.00	5.00	5.00	5.00	5.00
Louisville, Ky.....	2.50	2.25	2.75	2.50	2.25	2.75
Memphis, Tenn.....	2.00	2.00	2.00	2.00	2.00	2.00
Omaha, Neb.....	5.50	5.50	5.50	5.84	5.84	5.84
Peoria, Ill.....	3.85	3.60	4.00	3.90	3.65	4.15
Pittsburgh, Pa.....	4.25	4.00	4.25	4.40	3.90	4.40
Springfield, Ill.....	3.85	3.60	4.00	3.90	3.65	4.15
Springfield, Ohio.....	3.15	2.90	3.15	3.40	2.90	3.40
Steubenville, Ohio.....	4.25	4.00	4.25	4.40	3.90	4.40
St. Joseph, Mo.....	5.00	5.00	5.00	5.00	5.00	5.00
St. Louis, Mo.....	3.25	3.00	3.25	3.25	3.00	3.25
Terre Haute, Ind.....	3.40	3.15	3.60	3.25	3.00	3.50
Toledo, Ohio.....	3.65	3.40	3.65	3.85	3.35	3.85
Wheeling, W. Va.....	4.25	4.00	4.25	4.40	3.90	4.40
Zanesville, Ohio.....	3.75	3.50	3.75	3.85	3.35	3.85



## Hand Versus Electric Welding.

Comparative tests were recently made by Clarke, Chapman & Co. of England between hand welding and electric welding with apparatus made by the Thomson Electric Welding Company. The following table shows the results:

Cost of operating electric welding plant for the week ending March 18, 1891.

1 smith, 53 hours, at 33/...	£1. 13/0
1 lad, 53 hours, at 14/...	14/0
1 engineman, 53 hours, at 23/...	1. 3/0
Cleaning boiler.....	1/6
Coals, 36 hundred-weight.....	17/0
Wear and tear and depreciation.....	12/6
Interest on £1000.....	19/3
Glaze wheel grinding.....	0/9
<b>Total.....</b>	<b>£6. 1/0</b>

had given in to the men, and that they were more determined than ever to resist this unreasonable demand of nine hours' pay for eight hours' work. Reports coming in from the men indicate a constant growing discontent among the employees at this unreasonable and uncalled-for strike. It is believed that if the employers should open their shops to-morrow

Cost of manufacture by present forge fire method of the work done for the week ending March 18, 1891, by electric welding apparatus.

180 winch stays, at 2d.....	£1. 10/0
80 winch contg. rods, at 4½d.....	1. 10/0
41 brake straps, at 8d.....	1. 7/4
212 winch handles, at 2½d.....	1. 19/9
168 eccentric rods, at 2d.....	1. 8/0
168 piston rods, at 2d.....	1. 8/0
<b>Total.....</b>	<b>£9. 3/1</b>
	<b>6. 1/0</b>
	<b>£3. 2/1</b>

The above statement shows a saving by the electric welding method of £3. 2/1.

The advantages possessed by the electric process are thus set forth in a communication from Clarke, Chapman & Co.:

1. Superiority of welds thus obtained over fire welds.
2. Decrease in number of expert smiths (labor of more common kind being used as necessary to the one smith employed on welder).
3. The electric welding process enables articles to be welded in forms unattainable in fire welding, which leads to other improved developments of manufacture.

The money saving would be greater in many cases than in ours, as we had previously reduced by system the costs of all our fire welding to the figure consistent with sound work. Further, in our case (from special circumstances under which our installation was made) we have to show a debit, not only for interest and depreciation of boiler and engine specially used for this plant, but separate pay for engineman in charge. These items would not exist in the returns obtainable under the most advantageous conditions of working—i.e., where

(a) Existing engine power could be utilized, or still further,

(b) Where current could be obtained by day from suitable plant available for lighting works at night.

It is to be borne in mind that we have only one size of machine of comparatively limited range. With two machines covering a greater range, even our own returns would show much better, and in two cases (a) and (b) these improved results would be still further enhanced.

## Conference Between Molders and Iron Founders.

New York iron workers of various classes are considerably disturbed by local strikes, many important jobs being interrupted or suspended altogether. The housesmiths have about 3500 men out in this city, Jersey City and Brooklyn for the eight-hour workday. Between 300 and 400 foundrymen are out to aid the housesmiths.

The Housesmiths' Union held an all-day session in Clarendon Hall on Monday, and listened to a number of speeches. It was reported that the proprietors of the Price foundry of Long Island City and the Fletcher foundry of Brooklyn had expressed a desire to sign the agreement. It was also reported that out of a membership of 3500, not 50 members were working.

The Special Committee of the Iron Manufacturers' Association met at the office of J. B. & J. M. Cornell, Centre street, Monday afternoon, and issued the following statement:

"The Employers' Committee have received reports stating that not one of the employers who had signed the agreement

three-quarters of the men would come back on the old terms.

"In addition to the demand for nine hours' pay for eight hours' work the housesmiths also demand that the employers shall practically boycott the Architectural Iron Workers' Union, which belongs to the American Federation of Labor.

This demand, if conceded by the employers, would mean that these men who are in the American Federation of Labor should be discharged, and this the employers have refused to do.

"The molders who make the castings for the buildings mostly belong to what is known as Molders' Union No. 25. This is the strongest molders' union in New York and vicinity, has a large number of members in the United States generally and also in Canada, and is not allied with the Knights of Labor nor with the American Federation of Labor; and it has been intimated that if the housesmiths are successful in this strike they will immediately insist upon the discharge of all members of the Molders' Union No. 25 in furtherance of the effort to force the molders into the Knights of Labor. This demand the employers will never agree to, as they will not do injustice to any men to gratify others. The fact that the bricklayers will not join in this strike is a matter of great annoyance to the Housesmiths' Union, for it means that in case the employers decide to put non-union men in place of the strikers the buildings will go on just the same as before. . . ."

In these days of light steel castings and forgings for gun and engine work, it would be a very valuable aid to the constructor to have a ready method of ascertaining whether or not the castings are sound. An instrument for detecting flaws in metal castings and forgings, which is called a "sciscophone," has been invented by Captain de Place of Paris, and will be tested in this country within the next month. The apparatus consists of a small pneumatic tapper worked by hand and with which the piece of steel or iron to be tested is tapped all over. Connected with the tapper is a telephone with a microphone interposed in the circuit. Two operators are required, one to apply the tapper and the other to listen through the telephone to the sounds produced. These operators are in separate apartments, so that the direct sounds of the taps may not disturb the listener, whose province it is to detect flaws. The two, however, are in electrical communication, so that the instant the listener hears a false sound he can signal to his colleague to mark the metal at the point of the last tap.

## The Tin-Plate Trade.

English mail advices are to the effect that an adjourned meeting of the Tin-Plate Makers' Association (Masters) of South Wales and Monmouthshire has been held at Swansea for the purpose of ratifying a decision come to to the effect that all the works should be closed for four weeks from June 27. J. S. Tregonning (Morfa Works) presided, and the attendance was larger than at the previous meeting, 45 makers being present. A committee deputed to obtain assent from works not represented last week to the proposed stoppage reported that it had obtained additional assents, and that altogether 64 works with 367 mills had actually agreed to join the combination. Altogether, excluding a few in the Midlands, there are 471 mills in the trade, and confidence was expressed that many more assents will be forthcoming in a few days. The assents already given include the largest makers, but though the opinion prevailed that the signatures already received to the agreement were sufficient to make the stoppage achieve the desired object, the committee was requested to endeavor to get those makers who have not yet signed to do so. It was resolved to ratify the resolution passed at the last meeting: "That the works owned by members of the association be closed for four weeks from June 27."

Arrangements have just been completed for the manufacture at the Scott Foundry Department of the Reading Iron Company of a Haskell multicharge cannon. About \$55,000 of the \$100,000 appropriated for the manufacture and testing of these guns has been apportioned by the Ordnance Department for this purpose. It will be made of hydraulic forged steel, made at Bethlehem, and will be 30 feet long, in three sections, with an 8-inch bore. There will be two annular powder chambers, where charges will be placed in addition to the one in the breech, and as the projectile passes them they will explode and add to its velocity. It will be mounted upon a new plan, so that the recoil will be in a line with the axis of the bore, thus preventing the drooping at the muzzle, which has destroyed the usefulness of most of the modern large guns. It is estimated that the effective range of the gun, with a 600-pound projectile, will be fully 12 miles. The gun is expected to be completed in about six months, when it will be given a test, probably at Sandy Hook. Col. J. R. Haskell, the inventor, and officials of the Ordnance Department will superintend its construction.

A circular has been issued by Benjamin Hingley, M.P., chairman of the South Staffordshire Iron Trade Association, and the other members of Parliament who backed the Pig-Iron Warrants bill, in support of the measure. The circular states that the bill does not call in question the utility of warrant stores or the validity of warrants, but is intended to prevent and render illegal fictitious and illusory purchases and sales of warrants where no warrants exist; what is aimed at being the pretence or practice of selling warrants which the individual who sells has not in his possession or under his control. The bill, the circular states, will not hinder nor interfere with genuine transactions. It will not prevent contracts for future delivery of iron; neither will it prevent a consumer or buyer of iron from obtaining from a maker or merchant a binding tender or contract to supply a quantity of iron on agreed conditions. The second reading of the bill has had to be postponed to May 8.

The price of coke at Middlesbrough, England, has declined to \$3.27, or about \$1 less than in the beginning of the year.

## Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., May 5, 1891.

The Bureau of Ordnance, Navy Department, has been making some important tests of its 10-inch rifled guns for the double-turreted monitor Miantonomah at the Indian Head Proving Ground, on the Lower Potomac. The gun, which is the third, tested on the latest firing, used 239 pounds of powder, making 15 tons pressure and attaining 2116 feet per second muzzle velocity. This is the best result achieved by this class of high-power guns. The fourth 10-inch gun, which will complete the heavy battery of the Miantonomah, is practically finished, and will be taken to the proving ground in about ten days to receive her test before being placed on the monitor.

There has been considerable conferring here during the past week among the friends of the candidates for the Speakership, including McMillin, Bynum and Springer in the list of aspirants. There has been a decline in Mills' stock since the Senatorial succession surprise in Texas.

The conversations among the leaders indicate that the representatives, as a rule, are not in a hurry to pledge themselves to any one, but wish to wait to see how matters are tending later in the race.

### Decision in Silver-Lead Ore.

The United States General Appraisers have just promulgated another important decision growing out of a protest against the decision of the collector of customs at Eagle Pass, Texas. This importation of silver-lead ore was seized by the collector on the ground that the shippers and consignees were attempting to defraud the revenue by bringing in ores from several mines so mixed as to give the ore a high content of silver, and to make the importation dutiable only on the lead contained, instead of on its gross weight as lead ore. The case having been reported to the United States District Court and libel filed, the appellant having sought to replevy by giving bond and paying the duties, the collector raises an issue by claiming "that the Board of General Appraisers has no jurisdiction to hear and determine the appeal, but that the question involved must be determined according to the decision of the United States District Court."

It appears that duty to the amount of \$2427.60 was assessed upon the ore. This sum was paid by the importer under protest, as he claimed that of the amount \$877.92 was unlawfully exacted, improper samples having been taken in determining the classification of the ore. As the act of 1890 gives jurisdiction to the board in cases where the importer has duly expressed his dissatisfaction with the amount and rates of duties assessed, we see no reason why we should be excluded from a consideration of the appeal now before us because the question of the forfeiture of the merchandise is in controversy before a United States Court. The question for our consideration under this protest is the legality of the collector's method of assessing duty on two carloads of ore, weighing 99,200 pounds. He selected samples from a portion of the ore containing a very low silver content, claiming that the portions of the carloads rich in silver had been mixed in for the purpose of defrauding the revenue. In accordance with the assay of the samples thus taken, duty was assessed upon the 99,200 pounds at 1½ cents a pound as a lead ore. The collector states that if the ore was dutiable in its mixed state the appellant would be entitled to recover.

Lead and silver ores are thus provided for in act of 1890:

Lead and lead dross, 1½ cents a pound: Provided, That silver ore and all other ores containing lead shall pay a duty of 1½ cents a pound on the lead contained therein.

There is nothing in this provision of the tariff, or in any other that we know of, to warrant a discrimination against the importation of mixed ores.

There is no limitation or prohibition in regard to ores of any kind, and no such discrimination can be lawfully made except after further legislation by Congress.

The protest of the importer is sustained as to the amount of \$871.98, which we find to have unlawfully exacted.

In the list of reappraisements of value by the United States General Appraisers, an invoice of No. 10 steel wire from Manchester entered at £18 per ton was passed without advance.

## NEW PUBLICATIONS.

HINTS TO POWER USERS. By Robert Grimshaw, M.E., &c. Size, 6½ x 4 inches; 160 pages. Published by Cassell Publishing Company.

On the title page of this little work there is the explanation that the book contains plain, practical pointers, free from high science and intended for the man who pays the bills. In his preface the author points out that while this is pre-eminently a manufacturing nation, there is no ready source of information for those who pay the bills. It is admitted, of course, that there is plenty of extremely technical literature on the subject, but there is nothing for the enlightenment of the non-practical man. Mr. Grimshaw, therefore, has undertaken to present common sense talks on the more important matters relating to the use of power by manufacturers. The book is divided into brief sections of a page or more each, as the importance of the topic may warrant, and deals in very simple fashion with boilers and engines, feed pumps, governors, throttle valves and the principal parts of engines; also fuel and the proportioning of power. Attention is likewise given to water wheels and other motors, while at the close the important matters of shafting, shaft couplings, pulleys, clutches, belts, &c., are briefly dwelt upon.

In reference to the statement in our issue of last week that the next meeting of the Tin Plate Manufacturers' Association would be held in Pittsburgh on May 8, we are informed that the meeting will not take place till Wednesday, May 20.

Andrew Carnegie's superb new music hall on Seventh avenue and Fifty-seventh street is now complete, after an expenditure of \$1,250,000. The building is fire-proof throughout, for it is built of steel, iron and terra cotta, and nothing has been spared to reach less than perfection in the arrangements for heating, lighting and ventilation. It contains a main hall, seating 3000 people, with standing room for 1000 more, of much stateliness and distinction in its proportions, vaulted with a splendid arched ceiling, and richly elaborated in its decorations. The ownership of the hall is vested in a stock company, of which Morris Reno is president, Stephen M. Knowles treasurer, Frederick William Holls secretary, and whose board of directors is made up of John W. Aitken, Walter Damrosch, Sherman W. Knevals, Andrew Carnegie, William S. Hawk and William B. Tuthill. The hall has been intended especially for the uses of the Symphony Society and of the

Oratorio Society, but other musical organizations will find in it the accommodations long needed.

The Philadelphia Bridge Works of Corrode & Saylor, the manufactory of which is at Pottstown, have just received the following important orders: For the Philadelphia and Reading Railroad, 20 girder and truss bridges on the Port Reading extension, from near Bound Brook to the Kill Von Kull; for the New York Central Railroad, three large plate girder bridges on the Rome, Watertown and Ogdensburg division; for the Central Railroad of New Jersey, three bridges, two of which are for six tracks; for the Pennsylvania Railroad, two bridges at Trenton, N. J.; also a large iron machine shop to be built at Jersey City.

The works at Hemelingen, near Bremen, Germany, which were employed in the manufacture of aluminum and magnesium have now ceased to manufacture the first-named metal. They were using a modified Graetz-Castner process, but the cost of working was too high, and they could not compete with the large plant at Neuhausen-on-the-Rhine, which works the electrolytic process and utilizes the Schaffhausen water power. This company have reduced their prices to about a third of what they were a year ago. Pure aluminum (from 98 to 99½ per cent.) is quoted at \$2.25 per pound. Aluminum bronze is at from 23 to 35 cents, and aluminum brass from 17 to 19 cents. The company also manufacture castings, plates, wires and tubes.

The engine house, containing seven Dickson blowing engines, of the furnace plant of the Troy Steel and Iron Company, on Breaker Island, near Troy, N. Y., was destroyed by fire. Two of the three furnaces were in blast. The fire will keep the furnaces out for a considerable period.

The Herbertz cupola was running last week at the works of Thatcher, Young & Co., Elizabethport. We are informed that there have been melted in the 2-ton cupola 7300 pounds of iron in an hour and a quarter, using 6 per cent. of coke.

The Brooke Iron Company of Birdsboro, Pa., have notified the employees of their nail factory that a reduction of 12 per cent. in their wages will be made on May 15.

Work was resumed at the Twelve-Inch Rolling Mill, at Pencoyd, Pa., on Monday, leaving only one of the five large mills idle.

The Union Iron Company's charcoal furnace, at Detroit, Mich., which blew out March 20 for repairs, after a successful run of nearly three years, blew in again on May 5.

The Passaic spiegel furnace in Hudson County, N. J., operated by the Passaic Zinc Company of New York, was blown out April 14, after a continuous blast of over two years.

P. Delany & Co., boiler manufacturers, at Newburg, N. Y., are enlarging their works by the erection of a building 110 x 80 feet. This, together with the present plant and a three-story office building just acquired, will make the works the most extensive in the State.

The large furnace of the Leesport Iron Company at Leesport, Pa., went into blast on the 2d inst., after eight months' idleness.



## MANUFACTURING.

### Iron and Steel.

D. R. Lean, engineer and contractor, Pittsburgh, Pa., has just completed a 10-ton open-hearth steel furnace for Norton Brothers, Maywood, Ill.; one 10-ton open-hearth furnace for St. Louis Steel Foundry Company, East St. Louis, Ill., and a plant of two 20 x 60 foot Ford & Moncur patent fire-brick stoves for William M. Kaufman & Co., Sheridan, Pa. He is also remodeling and enlarging the charcoal furnace plant of the Canada Iron Furnace Company, Limited, at Radnor, P. Q.

On Friday, 1st inst., the plant of the Crown and Cumberland Steel Works, at Cumberland, Md., was sold at trustees' sale to M. P. Miller, for the account of Hicks & Dickey of Philadelphia for \$38,000. The sale cannot be ratified for 30 days, and until that is done the purchasers cannot obtain possession of the property. These works were sold by the trustees in September last to Hicks, Dickey & Sedell for \$38,000, but on objections filed by Henry Roberts, a stockholder of the company, from Pittsburgh, alleging inadequacy of price, a protracted litigation ensued, which resulted in an agreement by all parties in February to have the sale set aside and a new sale ordered.

Furnace A of Monongahela Furnace Company of McKeesport, Pa., was put in operation on Thursday, the 30th ult., after an idleness of several weeks on account of the coke strike. As soon as the firm are assured of a sufficient supply of coke Furnace B will also be put in blast.

During the year 1890 the Coleman-Shields Company of Niles, Ohio, manufacturers of pipe casing and tube iron, added to their plant six puddling furnaces and one heating furnace, making in all 23 puddling and three heating furnaces, with a daily capacity of 50 tons of pipe casing and tube iron. About two-thirds of this product is taken by the American Tube and Iron Company for their plant at Youngstown, Ohio.

On the morning of April 20 the stock house of the blast furnace of the Norton Iron Works, at Ashland, Ky., was destroyed by fire, causing a loss of about \$5000, fully covered by insurance. The fire did not interfere with the operations of the furnace, except for a few hours, or only long enough to make new steam pipe connections. A new stock house, to be built of iron, will be erected at once.

Mingo Furnace of the Junction Iron Company, of Mingo Junction, Ohio, and Bellaire Furnace of the Bellaire Nail Works, at Bellaire, Ohio, are the only ones in the Wheeling district that have been in continuous operation since the commencement of the coke strike. The Bellaire Nail Works have been using West Virginia coke, with what are claimed satisfactory results. Jas. Wilson, president, says that West Virginia coke, when carefully and skillfully made, will, he believes, successfully compete with Connellsville coke. Chemically it is as pure, and the only trouble likely to be encountered will be in its burden-bearing qualities. By analysis in their laboratory they find that the deleterious substances, such as phosphorus and sulphur, are no greater than exist on Connellsville coke.

The plant of the Warren Iron and Steel Company of Warren, Ohio, owned and operated by the Youngstown Iron and Steel Company of Youngstown, Ohio, has been closed down for some time past on account of the unsatisfactory condition of the iron market. The puddling department has been kept in operation, but it will also close down unless there is a decided improvement in the market. The plant of the Trumbull Iron Company, at Girard, Ohio, also operated by this firm, is now in operation, with poor prospects, however, for a long continuance.

The steel plant of the Riverside Iron Works, at Wheeling, W. Va., has been closed down, the stock of pig iron on hand being all worked up. The lap-weld department at the tube works has been shut down while repairs are being made to the furnace, which will require two or three weeks to complete. The butt-weld department is in full operation.

The executive offices of the Bethlehem Iron Company have been removed to the new office building of the Lehigh Valley Railroad Company, at South Bethlehem, Pa.

No. 2 furnace of the Antrim Iron Company, at Mancelona, Mich., has just completed a remarkable run of three years and eight days, during which time 66,910 tons of pig iron were produced. For over 18 months of this run the stack was blown with a 16 x 30 x 48 Weimer engine, producing 32,326 tons, and the balance of the time a larger engine of the same make, 28 x 48 x 72, was employed. This is believed to be the longest run ever made by a charcoal

furnace on a single lining. The furnace was blown out April 22, and No. 2 stack was immediately afterward blown in.

The Etna Iron Works, at Ironton, Ohio, have been sold to John S. Clark and John H. Barns of Philadelphia for \$266,667, one-half of the appraised value.

The labor troubles at the Pencoyd works of A. & P. Roberts & Co., Philadelphia, have led to a shooting affray. James Taggart, an employee of the works, was assaulted by a crowd of locked-out puddlers, and in self defense shot and seriously wounded one of his assailants.

The copper and sheet-iron works of W. A. Case & Son, at Buffalo, N. Y., were burned on April 28, at a loss of \$20,000.

Important improvements are shortly to be made to the Thomas Furnace at Niles, Ohio. A new cast house 100 x 70 feet will be erected, and a large blowing engine and two batteries of boilers put in. These and other improvements will materially add to the capacity of the furnace.

The plant of the Donaldson Iron Company at Emaus, Pa., is to be improved so as to increase its facilities for making cast-iron pipe and castings.

The annual meeting of the stockholders of the Washburn & Moen Mfg. Company will be held on the last Wednesday in this month, and at that time the vacancy caused by the death of Philip C. Moen will be filled. Before that time there will probably be a combination of the leading stockholders formed which shall dictate the policy of the meeting. Three names are prominently mentioned for the vacant offices of president and treasurer, P. W. Moen, the present superintendent and assistant treasurer, C. F. Washburn, the secretary of the corporation, and W. E. Rice.

The Ellis & Lessig Steel and Iron Company, Limited, of Pottstown, Pa., have decided to rebuild their plant at that place, and not to remove to Salem, Va., as previously announced by them.

Robert A. Carter, formerly foreman of Singer, Nimick & Co.'s mill, has purchased a tract of 80 acres at Hays Station, on the Monongahela River, near McKeesport, Pa., for a manufacturing site. A corporation has been formed, with a capital stock of \$100,000, to erect a rolling mill, with a finishing department, and the contracts will be let at once.

The Kilmer Mfg. Company of Newburgh, N. Y., owing to an increased demand for their wire nails, fence wire, &c., have been obliged to run these departments of their large establishment double time since the 1st of May, and are preparing to run their entire plant, including rod mill, double time.

The South Tredegar Mill, at Chattanooga, Tenn., has been put into operation by the Roane Iron Company, who will in the future operate this mill. The works have been extensively overhauled for the manufacture of bar iron, flats, angles, &c., and the company will also engage largely in the manufacture of cotton ties.

The Southern Malleable Iron Works have just been completed at Chattanooga, Tenn., and will begin operations at once.

Scioto Charcoal Furnace, at Scioto, Ohio, operated by Crawford & Leonard, will resume operations June 1. The furnace has been idle since last year.

Center Furnace, Ironton, Ohio, Kelly & Franklin, lessees, will be lighted on the 18th inst.

Pequest Furnace of Cooper & Hewitt, at Oxford, N. J., blew out on the 4th inst., owing to the general depression in the iron business.

The Belmont Furnace, of the Belmont Nail Company, at Wheeling, W. Va., is being relined, the stack is being built 10 feet higher and other improvements are being carried out.

The furnace and fuel gas producer plant designed and erected by S. R. Smythe of the S. R. Smythe & Laughlin Company of Pittsburgh for the plant of the Pennsylvania Tube Works, located in that city, is now all in successful operation and working to the entire satisfaction of the firm. This is the largest fuel gas plant that has ever been let by contract at any one time, and the saving of fuel, superiority of pipe made and the satisfactory results generally have far exceeded expectations. It may be said that this company have the best equipped and most modern pipe mill in the country, and great credit is also due Thomas Nuttall, the superintendent, for his engineering abilities and the manner in which he has made this change, putting in the finest machinery and equipment, and at the same time keeping the mill running full all the time while the change was being made. To demon-

strate the fact that the company are satisfied with their plant, they have already contracted with the S. R. Smythe & Laughlin Company for additional furnaces and gas producers.

### Machinery.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh have secured an order from the St. Louis Stamping Company of St. Louis for all the rolls to be used in a tin-plate plant which that concern have under construction. They have also secured an order from the Minneapolis Rolling Mill Company, recently organized at Minneapolis, Minn., for a modern three-high muck train, a large improved special squeezer, shears, &c. They will furnish all machinery necessary to put the muck mill in complete operation.

Byram & Co., Detroit, Mich., have recently received an order for one of their Colliu cupolas complete, for shipment to England.

The Ball Engine Company of Erie, Pa., announce that they will be represented in New York by E. T. Copeland & Co. of 106 Liberty street. They state also that they are making a large addition to their works.

One hundred men employed at the Neptune Iron Works, in Brooklyn, quit work ostensibly because a new foreman had been appointed. They denied that the eight-hour movement had influenced them at all, but said that they would not work under Foreman Reilly.

The Smith-Courtney Company have been incorporated at Richmond, Va., to have a capital stock of not less than \$75,000, nor more than \$250,000, to manufacture machinery.

The machine shop of Thomas Findley, at Oswego, N. Y., has been damaged by fire to the extent of \$4000.

Among the new machinery being put in by the Ferracute Machine Company of Bridgeton, N. J., is a planer weighing 23,000 pounds. The tool is already in place.

The capital stock of the Ticonderoga Machine Company, Ticonderoga, N. Y., has been increased from \$30,000 to \$125,000, and an addition is being built to the old machine shop, which will be 144 x 80 feet. The building will be of brick and equipped with the most modern machinery for the manufacture of mining machinery and gas engines.

The Wallace & Graves Machine and Foundry Company have filed articles of incorporation at Lafayette, Ind. The capital stock of the company is \$20,000, and they will manufacture steam boilers and castings.

The Taylor Bros. Iron Works Company, Limited, have been incorporated at New Orleans, La., with a capital stock of \$100,000, by W. A., W. R. and J. A. Taylor, proprietors of an iron foundry at that place.

The Fitchburg Steam Engine Company, Fitchburg, Mass., have just closed a contract for the engines, shafting, &c., for the Women's Christian Temperance Union temple in Chicago. The same company are also building a large compound engine for the Arnold Print Works, North Adams, Mass.; a large compound engine for the Brattleboro, Vt., Gas Light Company; are shipping a complete outfit, including large engine, boilers, shafting, &c., for a brass plant in Virginia; are building an engine for the morocco factory of Paschall, Lichten & Lyon, Frankford, Pa.; also a large engine for Barnes & Beyer, Philadelphia; are putting in an engine for the Tubular Rivet Company, Wallaston Heights; are building an engine for the Stockanisset School for Boys, Howard, R. I.; also a large engine for the Revere Rubber Company, Boston; an engine for Three Rivers Paper Company, Mich.; also a large engine for Chicago; and a great many smaller ones. The company have just issued a new catalogue, containing full information of their different styles of engines.

The Davis & Furber Machine Company's foundry, at North Andover, Mass., is being enlarged.

The foundry building and contents of the McArthur-Gillmore Foundry Company, at Cleveland, Ohio have been burned, at a loss of \$15,000.

The M. Steele Company of Springfield, Ohio, have leased the foundry of the late Wm. N. Whitely Works, large street railroad contracts making an increased capacity necessary.

The Dalton Development Company will erect a foundry and car-wheel works at Dalton, Ga.

The Missouri Malleable Iron Company of St. Louis were re-incorporated last month, with a capital stock of \$200,000, and the following officers have been elected: Jno. C. Nulsen, president; C. F. Orthwein, vice-president; F. E. Nulsen, secretary; A. J. Nulsen, treasurer,

and F. S. Taggart, general manager. The new firm propose to expend about \$100,000 on buildings alone for their new plant in East St. Louis. The property which they have acquired as a site is 1110 by 564 feet, bounded on the north by the Louisville, Evansville and St. Louis Railroad, better known as the Belt Line, on the south by Church Street, on the west by Minneapolis street and on the east by Omaha street. There are four blocks within the lines named, and on these they will erect the following structures: Molding room, 550 x 140 feet; annealing room, 250 x 110 feet; shipping room, two stories, 150 x 80 feet; machine shop, 80 x 70 feet; core room, 100 x 60 feet; boiler room, 60 x 50 feet, and tumbling barrel, engine, dynamo and fan rooms equal in area in the aggregate to 40 x 600 feet. There will be three furnaces and two cupolas at the outset of manufacturing operations, and additions thereto and to other parts of the plant will be made later, so as to bring the daily melt of iron up to at least 75 and probably 100 tons a day. Such extensive improvements, the company expect, will necessitate a still further increase of their capital stock, and this will be done when required.

The Rohan Bros. Boiler Mfg. Company of St. Louis are fitting up the power house of the new St. Louis and Suburban Railway with a battery of boilers aggregating 1200 horse power. They will also furnish the boilers for the electric light plant of the Municipal Electric Light and Power Company, East St. Louis. Last week they shipped three large 60 x 20 boilers to San Antonio, Texas, also a battery of 400 horse power to be used in the steam plant of a rock salt mine at Lyons, Kan. They have also begun the placing of four high-service boilers, each of 200 horse-power capacity, at the St. Louis Water Works.

#### Hardware.

Dill & Anderson, Richmond, Ind., have about completed the erection of a large factory for the manufacture of their Best Lawn Mower, Duplex Mower and Trimmer, Famous Edger, &c. Having been built by them for their special use, it will be complete in all its departments, and so arranged as to afford the greatest facilities for the prompt and thorough execution of orders.

There was a meeting of the Directors of the American Wringer Company at 35 North Maine street, Providence, R. I., last week. At a late hour it was voted to make a proposition to the city of Woonsocket to locate their plant there, consisting of a building for the manufacture of wringer machine rolls and others connected therewith, provided the city would exempt them from taxation on a sum not to exceed \$50,000 for ten years from the time that the building is finished. At a meeting of the City Council held subsequently it was voted that the proposition of exemption be granted.

The White Mountain Freezer Company, Nashua, N. H., report the demand for the White Mountain Freezer far ahead of any year in the history of the company, and notwithstanding the fact that they have kept about 300 workmen continually employed since last September in the manufacture of their line of freezers, yet the demand is so great they are now running their works 12½ hours per day, and find it difficult to keep production ahead of the demand. This company are, we are advised, the only manufacturers of ice-cream freezers that produce all parts of their machine from the raw material under their own roof. This gives employment to a large force throughout the entire year.

It is announced by the Ambler Saw Mfg. Company, Natick, Mass., that Frank H. Hall has retired from partnership in the company.

A meeting of capitalists was held at Youngstown, Ohio, on April 30, and preliminary organization effected of the Youngstown Metal Lath Company, to erect a plant at Youngstown for the manufacture of metal lath. Capital \$100,000. It is expected to have the plant in operation in 60 days.

The Cleveland Twist Drill Company, Cleveland, Ohio, have just let a contract for an extension to their building, and by June 1 they will have increased their plant by an addition, 115 x 40 feet, three stories high, which will be filled with machinery as rapidly as it can be gotten out. This enlargement of their facilities has been rendered necessary by the increasing demand for their drills, the excellent quality of which is recognized.

#### Miscellaneous.

On the 30th ult. a charter was granted to the Pennsylvania Novelty Company of Pittsburgh, with a capital stock of \$20,000. The following are the directors of the new concern: James Rodgers and Joseph Mitchell of

Pittsburgh; Walter P. Hansel, Brushton; Edward J. Small, Braddock, and John W. McDonald, Allegheny.

The Canadian Bridge and Iron Company's new building at Montreal, to replace the one burned last December, has been filled with new machinery and reopened. It is 100 feet square, covered with sheet iron.

The Whitley Reaper Works at Springfield, Ohio, were appraised by the receiver at \$444,961, including \$70,000 in machinery. The works complete cost \$1,500,000, the scale being beyond the requirements of the business.

Among recently authorized corporations in Illinois are the following: Harvey Electric, Water and Gas Company, Chicago, to build and maintain water works and works for the supply of heat, light and power by the use of electricity, gas or otherwise in Harvey, Cook County, and to build and operate a horse or dummy railroad; capital stock, \$150,000; incorporators, Horace H. Badger, Charles D. Stanwood and W. G. Wanzer. The Cable Iron Car Roofing Company, East St. Louis, to manufacture car roofing, car doors and other appliances for railway cars; capital stock, \$300,000; incorporators, Reed Northrop, John C. Wands and George A. Bannantine. International Electric Railway Company, Chicago, to obtain and control patents and franchises for electrical railways, manufacture appliances and plants, furnish power and light, build cars, &c.; capital stock, \$2,000,000; incorporators, Dennis L. Coe, M. M. Wood and J. T. Hanna. The Wisconsin Gas Company, Chicago, to manufacture gas, electricity or any other product for furnishing light, heat and power; capital stock, \$2,000,000; incorporators, William J. Lee, Truman M. Hall and Calvin C. March. Hunter Steel Company, Chicago, to manufacture steel and steel castings and do a general iron and steel business; capital stock, \$500,000; incorporators, Mahlon S. Frost, John C. Polley and Edmund J. Frost.

Over 2000 men, employees of the Michigan Car Works, Detroit, Mich., have gone on a strike without notifying the firm of their intention, and the majority of them, apparently, without a definite idea of why they were doing so. Some of the strikers ask for shorter hours, while others say the wages were not large enough. The trouble was evidently precipitated by the success attending the strike of the street car employees of that city. The strikers were riotous and threw stones through windows, injuring one workman. The strike is now practically at an end, the majority of the men having returned to work. No terms have been made with the company, who have remained firm against the strikers' demands.

The Rock Island Railway Company are reported to have bought the Peoria, Ill., rolling mill property, and it is said will remove their shops to that place.

L. H. Wilson and others have organized the Worcester Wire Mfg. Company at Newport, Ky.

The Globe Iron Roofing and Corrugating Company will remove their plant from Cincinnati, Ohio, to Newport, Ky., having purchased the Newport Iron and Steel Works.

The Carpenter Steel Works of Reading, Pa., have received an order from the Government for 6-inch steel projectiles amounting to \$200,000. These projectiles were recently tested at Annapolis, Md., with the result that the company have secured the contract mentioned above. The Carpenter works are supplied with orders which will keep them running full time for three or four years to come.

The contract for building the two lighthouse tenders, Lilic and Columbine, has been awarded by the Government to the Globe Iron Works of Cleveland, Ohio. The contract price is \$155,000, which is about \$5000 less than the bid of the Pennsylvania Steel Company. These will be the first vessels designed for ocean use ever built on the lakes for the Government. The boats are of the same size, 155 feet long over all, 140 feet between perpendiculars, 26½ feet molded depth and 15 feet 2 inches hold.

It is reported that the Calumet and Hecla Mining Company are interested in the building at Black Rock, near Niagara, of the Buffalo Smelting Company. Ten copper refining furnaces will be built.

The Youngstown Metal Lath Company of Youngstown, Ohio, have applied for papers of incorporation. The company are capitalized at \$100,000, and will commence operations at Youngstown at once.

A storehouse of the Florence (Mass.) Machine Works, in which were stored some 5000 oil stoves of the Central Oil Stove Company

ready for market, caught fire May 1 and was totally destroyed. The loss on oil stoves is about \$7500, insured for about \$5500; on building, \$1200, insured for \$600.

The Charlestown Mfg. and Development Company have been incorporated at Charlestown, W. Va.

It is stated that there are now in full blast in the Pocahontas, Bluestone and Elkhorn fields of the Flat Top coal region, in Virginia, 2138 coke ovens, with 647 in course of construction and 460 to be built this summer.

The Buena Vista, Va., Iron Company have increased their mining force by nearly 100 per cent., about 500 men now being employed at the mines.

Buchanan, Va., is reported to have closed a contract with the Smith & Briggs Brass Company of Brooklyn, N. Y., whereby the company will remove their works to the Southern city.

An ore washing plant is being erected at the mines of the Alabama Coal and Iron Company, at Shelby, Ala.

Report says that the G. G. Lane Car Coupler Company of Prosperity, S. C., will increase their capital stock from \$10,000 to \$250,000. The president of the company is J. M. Wheeler, the vice-president A. H. Hawkins, and the secretary G. W. Wilson.

The work of erecting a smelter at Isabella, Tenn., is being pushed forward vigorously by the Ducktown Copper and Sulphur Company. The narrow-gauge railroad at that point is being put in order for conveying the ore from the mine to the smelter.

The contract for the stone foundation of the Glasgow Edge Tool Works has been awarded and the work of constructing the building will be pushed forward with all possible speed.

The Chadwick Two-Wheeler Cart Works in Olean, N. Y., it is stated, will remove their plant to Salem, Va., as soon as the necessary building is completed. This will be 210 x 150 feet, 3½ stories high.

The Southern Farm Tool Company have been incorporated at Atlanta, Ga., by Thomas Lumpkin, A. M. Hipps and others. The capital stock of the company is \$100,000, and the business to be carried on is the manufacture and sale of machinery and agricultural implements.

An ore-washing plant is being erected by the Alabama Coal and Iron Company at their Shelby Furnace mines, at Shelby, Tenn.

Ground has been broken at Harrisonburg, Va., for the shovel works to be erected by Wm. Norris & Co. of Stourbridge, Eng.

The Youngstown Car Mfg. Company of Youngstown, Ohio, have a large number of contracts on hand that will necessitate a small increase in their present force of employees.

Naval Constructor Mintonye has taken up the lacquer-covered plates that have been immersed in the navy yard basin for several months past, and forwarded them to Washington with his report. It is understood that an important point of this report will deal with the insulating power of the plates against galvanic action, a point in which lacquer differs from ordinary protective compounds. It is well known that if a steel plate having magnetic oxide of iron on its surface be exposed to sea water a strong galvanic couple is set up between the oxide and the steel underneath the protective covering, and pitting of the metal results. With lacquer the case is different. Lacquer has no chemical action on the magnetic oxide, and if the plate is dry when it is applied galvanic action is prevented. The exclusion of water prevents any action whatever, and the best results with the test plates were obtained on plates on which the presence of the magnetic oxide was ignored. The removal of this oxide, which is ordinarily considered necessary, is therefore avoided.

The Tharsis Sulphur and Copper Company, a Spanish pyrites mine, have since their formation paid £4,663,432 in dividends. In 1890 the profit was £297,487, out of which a dividend of 22½ per cent. was paid.



# TRADE REPORT.

## Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street,  
CHICAGO, May 6, 1891.

The improvement in trade noted last week has grown more pronounced. A remarkable increase is reported in the inquiries in several lines, and sales are much larger than they have been. It really looks now as though the corner had been turned and the long-expected period of activity was setting in. Steel Rails have not yet begun to move, however, and many buyers in other lines are waiting to take their cue from the Rail trade before laying in large stocks.

**Pig Iron.**—Continued business is reported in Lake Superior Charcoal Iron at low prices, but sellers insist that they are not booking orders at much under \$17. The leading makers are holding for higher rates, as they are well supplied with orders for the next four to six months. The quantity of Charcoal Iron sold since the break in prices must have been very large. Salesmen who have recently been soliciting orders for Coke Iron in the Northwest report that Lake Superior Charcoal can be had at about an even price, and secures the preference among consumers. There has been fair activity in sales of local Coke, while the inquiry is very heavy from large consumers for deliveries the remainder of the year. They are slow to close such contracts, because the price of Coke Iron has not declined to correspond with the drop in Charcoal, but manufacturers insist that consumers are indulging in a vain hope if they are waiting for such a contingency. Southern Coke has been inactive, but large contracts are pending upon which buyers have set a price that sellers claim will not be conceded. Hocking Valley Silveries have been moving quite actively, but mainly in carload lots. We quote, for cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @	\$18.00
Local Coke Foundry, No. 1.....	15.50 @	16.00
Local Coke Foundry, No. 2.....	15.00 @	15.50
Local Coke Foundry, No. 3.....	14.50 @	15.00
Local Scotch.....	16.00 @	16.50
Ohio Strong Softeners.....	18.50 @	19.10
Southern Coke, No. 1.....	16.00 @	16.50
Southern Coke, No. 2.....	15.50 @	15.75
Southern Coke, No. 3.....	14.75 @	15.00
Southern, No. 1, Soft.....	15.25 @	15.50
Southern, No. 2, Soft.....	14.25 @	14.50
Southern Gray Forge.....	14.25 @	14.50
Tennessee Charcoal, No. 1.....	18.00 @	18.50
Alabama Car Wheel.....	22.50 @	23.50
Coke Bessemer.....	17.00 @	17.50
Hocking Valley, No. 1.....	18.25 @	18.50

**Bar Iron.**—More business has suddenly come in sight than at any previous time for four months. One order for 1000 tons was taken by a Mahoning Valley mill at 1.55¢, half extras, Youngstown, but with some reluctance, as the sellers were disinclined to fill up at low rates. An advance of 5¢ @ 100, and perhaps more, was realized on an order for Car Iron, for delivery at St. Louis. From 8000 to 10,000 tons are in the market for bids. The improved prospects are caused by the demand from plow makers, wagon builders and other heavy consumers, who are now seeking to place season contracts, because they believe prices are at bottom. A very limited amount of business could now be placed with local mills at 1.60¢, the general quotation being 1.65¢, half extras. Jobbers still quote 1.80¢ for small lots from stock and 1.75¢ for carloads, full extras.

**Structural Iron.**—Another 16-story building contract has been placed which will require about 1500 tons of beams. It was secured by Carnegie, Phipps & Co. The new Frazer & Chalmers works have

also been let, and they will take a considerable quantity of Iron and Steel. More large building enterprises are getting into shape for bids, and the retail demand for Beams is at the same time quite active.

**Plates.**—A much better inquiry is reported, and the situation seems to be improving. A great deal of business is in contemplation. Prices are still very low, however. An order for 500 tons of narrow Steel Plates for a manufacturer of railroad specialties was divided between two Pittsburgh makers at a rate under anything previously made here. Prices remain as follows: Nos. 10 to 14 Iron Sheets, 2.65¢ @ 2.70¢; Steel Sheets, 2.80¢ @ 2.90¢; Tank Iron, 2.50¢ @ 2.60¢; Tank Steel, 2.60¢ @ 2.70¢; Boiler Tubes, 55¢ off up to 2½ inches and 60¢ off on greater.

**Sheets.**—Business in Black Sheets is still withheld, as buyers and sellers are too far apart in their views. Galvanized Iron is quiet, but prices appear to have touched bottom at last, as they have been steady for some time. There is some weakness among jobbers, and regular prices are not so strictly adhered to as in weeks past.

**Steel.**—The Billet trade presents a surprise this week in the sale of a round lot of Southern Steel Billets for delivery in this section at considerably lower prices than have thus far been named by the Northern makers. A new element of competition is thus introduced. The Billets come from Chattanooga. The demand for Tool Steel has latterly been very good, some railroad trade being included at last. Store trade on cheap Steel has been good for the past month, and some season contracts are now coming forward. Prices are unchanged, as follows: Tool Steel at 6½¢ @ 8¢ and upward, according to brand; Open-Hearth Machinery at 2.30¢ @ 2.65¢, Spring at 2.50¢ @ 2.75¢, Tire at 2.30¢ @ 2.60¢, and Bessemer Bars at 2.20¢ @ 2.30¢.

**Track Supplies.**—No business of moment has occurred in Steel Rails. Large orders are being held in abeyance, presumably until crop prospects are more certain. Quotations are continued at \$31 and upward, according to quantity. A large order for Splice Bars is in the market from an important road in the Northeast. Iron Bars still quoted at 1.85¢ @ 1.90¢. Spikes are in light demand and quoted at 2¢ for small lots. Track Bolts are quiet, and Hexagon Nuts are quoted at 2.80¢ @ 2.90¢.

**Old Rails and Wheels.**—The only transaction reported in Old Iron Rails is one of 500 tons at \$22.50. In Old Steel Rails more business is noted and prices are better—say \$14.50 short pieces and \$17 long lengths. Old Car Wheels are very quiet, and nominally quoted \$16.50 @ \$17.

**Scrap.**—Dealers report another dull week, but make no change in their asking rates, viz.: No. 1 Railroad, \$19; No. 1 Forge, \$18.50; No. 1 Mill, \$13.50; Fish Plates, \$21 @ \$21.50; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horseshoes, \$18.50; Cast Borings, \$7.50 @ \$8; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

**Metals.**—Inquiries for Copper are better, especially from large consumers. Casting Brands are quoted 11½¢ @ 11¼¢, Lake 14¢ in carloads. Prime Western Spelter is having an average demand at 4.90¢ @ 4.95¢ for carloads from the galvanizer's. Everett & Post state that the week has been a quiet one in Lead circles. The market opened with sales of Desilverized

at 4.05¢; later 4.10¢ was realized. Consumers have taken on considerable Lead during the past ten days and for the present their needs are fairly supplied. The closing is quiet and fairly steady at 4.05¢. The average price of Pig Lead in Chicago for the month of April was 4.05¢, against 3.80¢ for the same period last year.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,  
PHILADELPHIA, Pa., May 5, 1891.

The market is firm, and while there is no urgency to place orders at the full prices, which holders are inclined to ask, it is becoming tolerably clear that the tendency is in sellers' favor. At the old prices there is a good demand, and sales have been on a liberal scale, at what would have been considered very full prices some two or three weeks ago. But buyers are moving with great caution, and either get what they want on their own terms or take small lots to tide them over until the market shows some definite character. There are some disturbing elements yet, and until these are out of the way it is hardly likely that there can be any important movement toward better prices. The Coke strike is still undecided, and some people are inclined to the idea that there will be a heavy increase in production of Pig Iron soon, as there is plenty of Coke, and that any premature advance should be deprecated on that account. And besides that, the rolling-mill interests are still in a very depressed condition; and until they get pretty well filled up, it will be useless to expect any permanent improvement in Pig Iron. Acting on this theory, buyers are not climbing for Iron, although per contra, it may be said that sellers are in an equally independent position, having only very moderate stocks on hand, while many are sold weeks ahead. This is especially the case with the better class of foundry irons, which are scarce, and easily salable at outside figures. Lower qualities are subject to sharper competition, although the prices quoted herewith are fairly in line with the market, as there is no particular pressure to realize. On the whole, therefore, the market may be called steady all the way through, and strong in spots. Prices for lots delivered in consumers' yards are about as follows, and perhaps 25¢ less for deliveries nearby points West or South:

Ohio Softeners, No. 1x.....	\$19.00 @	\$19.50
Ohio Softeners, No. 2x.....	18.00 @	18.50
Standard Penna, No. 1x.....	17.50 @	18.00
Standard Penna, No. 2x.....	16.50 @	17.00
Medium Penna, No. 1x.....	17.25 @	17.50
Medium Penna, No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	16.75 @	17.50
Virginia, No. 2x.....	15.75 @	16.00
Standard Neutral All-Ore Forge	14.75 @	15.25
Ordinary Forge Cinder mixed..	14.00 @	14.25
Hot Blast Charcoal.....	20.00 @	21.00
Cold Blast Charcoal.....	24.00 @	27.00

**Bessemer Pig.**—Some business is being done on the basis of about \$17.25, at furnace, for standard qualities, but there is no urgency in the demand; neither is there any particular pressure to sell at prices which would involve concessions. The Pennsylvania Steel Company are offering a fine quality of Iron for open hearth Steel at \$19.50, at furnace, guaranteed not over 0.03 in phosphorus.

**Ferromanganese.**—Not much demand, but prices are steady at \$64.50 @ \$65, for May and June shipments of 80%, duty paid.

**Steel Billets.**—Market firm, but less active than it was a week ago. Prices appear to have settled down to about \$28, at tide, or \$27.50, at points on the Susquehanna, but as immediate wants have been covered, bids are not as numerous as they were at date of our last report. Slightly

lower figures are quoted on July and later deliveries, but consumers are inclined to wait developments before entering into further engagements.

**Steel Rails.**—Market very quiet, but prices are held with absolute firmness, and from present appearances are likely to be so held, as there will be plenty of business before long. Sales mostly in small lots, but it is said that no proposals could be entertained which would involve concessions.

**Muck Bars.**—The market is a little easier, as the more urgent requirements of consumers appear to have been provided for. Sellers are firm, however, and although some might feel inclined to accept bids of \$26—at their own mills—others quote \$26.25 @ \$26.50. At the moment a good deal depends on individual conditions. If it is necessary to realize, the market cannot be depended on to yield full quoted rates, while if the necessity was on the part of the buyer, it would be difficult to do better than \$26.75 @ \$27, delivered, with a low rate of freight.

**Bar Iron.**—The market is a trifle better, both as regards price and demand, although the improvement is by no means general. The great majority of the mills are hungry for orders, and for anything worth while as regards quantity, price with many is a secondary consideration. For 100-ton lots a trifle less than 1.70¢ has been quoted, delivered Philadelphia, although the city mills claim 1.75¢ @ 1.80¢ as their price. At points in the interior still lower figures are mentioned, and for car specifications bids of 1.65¢ would not go a begging. But there is a general impression that a better demand is at hand and that prices are about as low as will be seen for some time to come.

**Skelp Iron.**—Demand very light, although a few small lots have been taken at from 1.70¢ @ 1.75¢, delivered, for Grooved, and 1.85¢ @ 1.90¢ for Sheared.

**Plates.**—Some little improvement is noted in the general demand, and several leading mills appear to get all the orders they can handle, although there is not sufficient of an accumulation to warrant them asking an advance. Things appear to be shaping in that direction, however, but in the meanwhile the market is waiting developments. The usual asking prices for lots delivered in consumers' yards are about as follows:

	Iron.	Steel.
Tank Plates.....	2.00 @ 2.10¢	2.05 @ 2.20¢
Refined.....	2.20 @ 2.30¢	2.05 @ 2.10¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

**Structural Material.**—There is nothing heavy on the market at present, but the demand for small lots is fair, which with deliveries on old orders keeps the mills moderately employed. Prices are steady, and for lots delivered in consumers' yards are usually as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—The demand is not as active as could be desired, although the prospects are thought to be favorable for a large trade later on. Some of the mills are running full, others are only employing part of their capacity, as they are not willing to meet the prices which large buyers are offering. Ordinary asking prices are about as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @ 3.20¢
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @ 3.50¢
Best Refined, No. 28.....	3.50¢ @ 3.60¢
Common, 1/4¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3 1/4¢

Best Soft Steel, Nos. 21 to 24.....	3 1/4¢ @ 3 1/2¢
Best Soft Steel, Nos. 25 to 26.....	4¢ @ 4 1/4¢
Best Soft Steel, Nos. 27 to 28.....	4¢ @ 4 1/4¢
Best Bloom Sheets, 1/4¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	@ 65%
Common, discount.....	@ 67 1/2%

**Old Rails.**—Iron are offered at \$23.50, delivered; Steel at \$17.50 @ \$18, with small sales of the last mentioned, but nothing is reported in Iron.

**Scrap Iron.**—Market does not vary much in prices, but the demand is a little slow, so that full quotations can only be obtained on choice lots. Nominal prices about as follows: No. 1 Railroad Scrap, \$21 @ \$22, Philadelphia, or for deliveries at mills in the interior, \$21.50 @ \$22.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18, delivered, for Old Car Wheels.

**Wrought-Iron Pipe.**—At a meeting of manufacturers held last week prices were again changed to figures equal to an advance of about 2 1/4%. Notwithstanding this jobbers are making prices of their own, and not generally in the direction above noted. The demand is fairly active, and prospects are favorable for a larger business, but actual selling prices are far from satisfactory. Discounts are officially given as follows:

Butt-Welded Black.....	55%
Butt-Welded Galvanized.....	45%
Lap-Welded Black.....	65%
Lap-Welded Galvanized.....	52 1/2%
Boiler Tubes, 3 1/2 inch and under.....	55%
Boiler Tubes, 2 1/2 inch and larger.....	60%

## Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts.,  
CINCINNATI, May 6, 1891.

**Pig Iron.**—The market, as a whole, is in no worse condition than it has been; neither can it be said that it is in better condition, for there is much Iron obtainable at old prices; especially is this true of Gray Forge and Mottled and No. 3 Southern Coke Foundry Iron, but No. 2 is in comparatively light supply and the demand for it exceeds the offerings, so that quotations are advanced 25¢ per ton. There is no Mahoning or Shenango Valley Iron coming here now, and the quotation is merely nominal. In fact, the movement is in that direction. There have been considerable sales of Southern Forge Iron in a small way for spot and early future delivery on the basis of quotations which aggregate a fair volume of business, and orders to hasten deliveries are more numerous, although there are still some requests for delay. The Southern furnaces as a rule are not disposed to accept orders for long forward delivery at current prices, and as buyers are not educated up to paying more, there are no transactions of importance to be reported. There is so little call for Car Wheel and Malleable Irons that it is difficult to give accurate prices, but the indications are that it would not be difficult for buyers to obtain concessions, and perhaps a material shading of quotations might be made. There is an undertone of confidence that prices have reached their lowest point, and there are some indications that buyers who need Iron are disposed to take advantage of current prices to supply their anticipated wants, but until the demand for the finished product materially enlarges there is not much ground to hope for any material enhancement in values.

### Foundry.

Southern Coke, No. 1.....	\$15.00 @ \$15.25
Southern Coke, No. 2.....	14.00 @ 14.25
Southern Coke, No. 3.....	13.50 @ 13.75

Ohio Soft Stone Coal, No. 1.....	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16.50
Mahoning and Shenango Valley.....	17.50 @ 18.00
Hanging Rock Charcoal, No. 1.....	20.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 21.00
Tennessee and Alabama Charcoal, No. 1.....	17.00 @ 17.50
Tennessee and Alabama Charcoal, No. 2.....	16.50 @ 17.00

### Forge.

Gray Forge.....	12.75 @ 13.00
Mottled Neutral Coke.....	12.50 @ 12.75

### Car Wheel and Malleable Irons.

Southern Car Wheel.....	18.50 @ 20.50
Hanging Rock, Cold Blast.....	20.00 @ 22.00
Lake Superior Car Wheel and Malleable.....	19.50 @ 20.50

## Cleveland.

CLEVELAND, May 4, 1891.

**Iron Ore.**—The information regarding the big sales of ore, reported exclusively in last week's *Iron Age*, was a source of surprise to many local Iron men who have steadfastly maintained that nothing in the way of sales had yet been made. Even the local papers were slow to believe that the reports could be true. Later developments, however, have attested their accuracy. Sales of non-Bessemer Ores aggregating 75,000 or 80,000 tons are reported this week at figures equivalent to \$3.50, f.o.b. vessels, Cleveland. It seems probable that the sales to date exceed 750,000 tons. The Republic and Champion mines have placed a considerable amount of their prospective output at \$5.50, and additional sales are anticipated this week. Probably 50,000 tons of non-Bessemer, Specular and Magnetic Ore have been disposed of at about \$4.50, f.o.b. vessels, Cleveland. Bessemer Hematites are selling for \$4 @ \$4.50, or about \$1 @ \$1.25 below last year's figures. A number of charters from Escanaba to Cleveland have been made on private terms, believed to be about 70¢ per ton. The market is not expected to show any very great activity for two or three weeks to come. Following are quotations:

No. 1 Specular and Magnetic Ores, Bessemer quality.....	\$5.25 @ \$5.50
No. 1 Specular and Magnetic Ores, non-Bessemer quality.....	4.00 @ 4.50
Gogebic Ore, Bessemer quality.....	4.25 @ 4.50
Menominee Ore, Bessemer quality.....	4.50 @ 4.75
Menominee Ore, non-Bessemer quality.....	3.50 @ 3.70

**Pig Iron.**—The improvement noted last week continues, and the sales that have been made have been at an advance of from 50¢ to \$1 per ton over the prices prevailing two or three weeks ago. Bessemer Iron seems to be a very scarce commodity. Foundry Irons are hard to obtain at \$16, cash, at the furnace. Some Bessemer Iron has been sold, but the prices obtained have varied so widely that quotations are of little value. Cleveland quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal.....	\$20.00 @ \$21.50
No. 1, 2 and 3 Bessemer, per ton.....	16.50 @ 17.50
No. 1 Strong Foundry, per ton.....	16.50 @ 17.50
No. 2 Strong Foundry, per ton.....	15.50 @ 16.50
No. 1 American Scotch, per ton.....	16.50 @ 17.50
No. 2 American Scotch, per ton.....	15.50 @ 16.50
No. 1 Soft Silvery, per ton.....	17.00 @ 18.00
Mahoning and Shenango Valley Neutral Mill Irons, per ton.....	14.50 @ 15.50
Mahoning and Shenango Valley Red Short Mills, per ton.....	15.50 @ 16.50

**Manufactured Iron.**—The market is only moderately active, but good business is looked for within a week or two. Common Bar is bringing about 1.60¢ @ 1.65¢.

**Old Rails.**—We hear of a sale of 500 tons of Old Americans at \$23. Not much is being done.

**Nails.**—Prices are down another notch, Steel Cut now being quoted at \$1.70, and Steel wire at \$2.15.

**Scrap.**—Business is light. About \$19.50 @ \$20 is being paid for No. 1 Railroad Wrought; \$12 for Wrought Turnings, and \$16.50 for Old Car Wheels.



## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, May 6, 1891.

With the exception of labor complications the outlook for general business is all that can be desired. Crop reports are generally favorable, and altogether a more cheerful feeling prevails.

**Pig Iron.**—There has been continued activity in Bessemer Iron, sales of some 10,000 or 12,000 tons having been reported, all for immediate or nearly delivery, and at a further advance—\$17 @ \$17.25, cash. There appears to be but little inquiry for future delivery, and we said that the demand for immediate use has been satisfied for the present. Carnegie, Phipps & Co., are credited with having bought the great proportion of the Bessemer Iron sold here during the past couple of weeks. It may also be stated that there is little or no stock remaining in first hands in this district, and a steady market is assured until some of the furnaces blow in, which cannot be expected until the Coke strike is brought to a close. Forge Irons continue quiet as compared with Bessemer, although it, too, is getting scarce, but there is not nearly as much inquiry for the former as the latter, owing to the unsatisfactory condition of the market for finished products. Foundry Irons quiet and unchanged. We quote prices as follows:

Neutral Gray Forge.....	\$13.75 @ \$14.25, cash
All-Ore Mill.....	14.75 @ 15.25, "
White and Mottled.....	13.00 @ 13.50, "
No. 1 Foundry.....	15.50 @ 16.00, "
No. 2 Foundry.....	14.75 @ 15.00, "
No. 3 Foundry.....	14.00 @ 14.25, "
No. 2 Charcoal Foundry.....	21.00 @ 21.50, "
Cold Blast Charcoal.....	25.00 @ 27.00, "
Bessemer Iron.....	17.00 @ 17.50, "

So far as we are advised there have been no sales of Bessemer made above \$17.25, cash, excepting for some few small lots at \$17.50 for foundry use. A number of valley furnacemen say that they do not intend to start up their furnaces when the Coke strike is over, unless the price of Coke and Ore is reduced, and they also want lower freight rates. Thus far but few Ore contracts have been made, and it is evident that furnacemen are holding off in expectation of still lower prices. Those of our city furnaces in blast are well sold up.

**Muck Bar.**—Demand continues rather light, while prices remain about as last quoted, \$26 @ \$26.50; sales of some 2500 tons at \$26 and 1000 tons at \$26.50. There is considerable offering and not much wanted, as nearly all the mills here are able to turn out as much of their own as they want, but the demand may improve later on in the season.

**Ferromanganese.**—There has been rather more doing; sales of some 325 tons 80 % domestic at \$66.50, cash, and 25 tons 70 % at \$61, cash. There is but little foreign being sold here at present, as it can hardly be laid down from seaboard at the price of domestic.

**Manufactured Iron.**—The demand for Finished is still reported slow for the season, which is attributed in part to labor troubles, but it is hoped that it will improve later on; business is not what it should be at this time of year, and though the mills are generally in operation, but few of them are running up to their full capacity. Prices remain as quoted a week ago, with desirable orders booked at inside quotations: Bars, 1.70¢ @ 1.75¢; Tank and Plate 2.10¢ @ 2.15¢; No. 24 Sheet, 2.80¢ @ 2.85¢, 60 days, 2 % off for cash. Valley mills continue to quote Bars at 1.55¢ @ 1.60¢, half extras, with some of them refusing to sell below 1.60¢. Skelp Iron continues weak; may be quoted at 1.60¢ @ 1.65¢ for Grooved and 1.80¢ @ 1.85¢ for Sheared, four months, 2 % off for cash.

**Nails.**—There appears to have been a little more inquiry for Cut Nails the past week, and late advices from the Nail-making districts report a firmer market, quoted at \$1.55 @ \$1.60, 60 days, 2 % off for cash, and an order for 10,000 kegs is reported as having been placed within the range of prices quoted. More inquiry reported for Wire Nails, but no improvement in prices, which may be quoted at \$2, f.o.b. at factory, 60 days, 2 % off for cash.

**Structural Iron.**—There is no improvement reported in the demand, nor can it be expected while labor troubles continue. Carpenters here went out on the 1st inst. for eight hours instead of nine, demanding one hour less work and 5 cents a day more wages, which was refused by the boss carpenters. As a consequence of this strike, a great many contemplated improvements have been abandoned for the present. Prices remain unchanged: Channels and Beams, 3.10¢; Angles, 2.05¢; Tees, 2.65¢; Steel Sheared Bridge Plates, 2.80¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.85¢ @ 1.90¢.

**Steel Plates.**—Demand is still reported light, but prices remain unchanged; an improvement in demand is hoped for before long. Fire Box, 3.90¢ @ 4.25¢; Flange, 2.70¢; Shell, 2.45¢ @ 2.50¢; Tank, 2.10¢ @ 2.15¢. Manufacturers would like to see the national Government order the building of additional steel cruisers.

**Merchant Steel.**—Business is still reported slow, while prices remain unchanged.

**Barb Wire.**—No change in prices, as follows: Glidden Painted, \$2.85; do. Galvanized, \$3.40; Four-Point Painted, \$2.80; do. Galvanized, \$3.35. These rates are for car lots at makers' works. The above, which are the syndicate prices, so far as we can learn are being adhered to by manufacturers, but jobbers who had stocked freely before the advance are now underselling the manufacturers. A broker here who had an order for a lot of 100 tons bought from a jobber who undersold the manufacturer.

**Billets and Slabs.**—We have to report a more active and stronger market for Billets, an advance of 50¢ @ ton having been established the past week, in sympathy with the enhanced cost of Bessemer Pig, which has advanced \$1.25 to \$1.50 @ ton within a few weeks. We now quote at \$25.50 @ \$26, with sales of 3000 tons at Wheeling and 1500 tons here at \$25.50. When the market is tending up, as has been the case the past week, there is always an increased demand.

**Steel Rails.**—Heavy sections are reported firm at \$30, f.o.b. at mill. The Edgar Thomson Works are running up to their full capacity and shipping Rails away as fast as they can be made.

**Old Rails.**—There is some inquiry, but no improvement in prices; sales of Iron at \$24, and Steel, long lengths, at \$17.75. Nearly all the Rails being sold here are to valley consumers. The consumption of Iron Rails in this market is a thing of the past. The largest Pittsburgh consumer, Dilworth, Porter & Co., abandoned their use a year or more ago, using Steel instead. However, the stock of Iron Rails is small, and is growing less all the time, as no new ones are being made.

**Wire Rods.**—There have been no sales reported, hence it is difficult to give reliable quotations. A rumor obtained of an order having been on the market for 10,000 tons deliverable at Cleveland, but nothing definite could be learned in regard thereto. The feeling, however, is firmer in consequence of the advance in Rod Billets.

**Railway Track Supplies.**—There is a fair business, but no change in prices. Spikes, either Iron or Steel, \$2.05, f.o.b. at works, 30 days; Splice Bars, Iron or Steel, 1.85¢ @ 1.95¢; Track Bolts, 2.85¢ with Square and 2.90¢ with Hexagon Nuts.

**Wrought-Iron Pipe.**—At the regular monthly meeting of manufacturers in New York, April 29, prices were advanced as follows: Discounts on Black Butt Weld, 55 %; on Galvanized do., 45 %; on Black Lap-Weld, 65 %; on Galvanized do., 52½ %. Orders of from two to ten cars special per cent. extras. Freight allowance in car lots not to exceed 20 %, net, 30 days.

**Old Material.**—There is an increasing business, but no improvement in prices, which continue weak. Sales of No. 1 Wrought at \$19.50 @ \$20, net ton; Car Axles at \$26, net; Old Car Wheels \$16.50 @ \$17, gross; 1000 tons Cast Scrap reported at \$14, and 2000 tons Steel Bloom Ends at \$18, gross.

**Connellsville Coke.**—There has not been much change in the situation the past week. While the strike still continues, the indications are that the end is near; also that the strikers will be worsted. Operators report that the number of men resuming work each day is increasing, and that they expect to be able before long to supply all the Coke needed.

The offices of the Pittsburgh Metallurgy Company have been removed from 801-802 Hamilton Building, Pittsburgh, to room 605 in the same building.

The annual meeting of stockholders of the Pittsburgh Car Trust Company was held in Pittsburgh on Monday, May 4. The election of officers resulted as follows: J. D. Callery, president, and the following named gentlemen were elected as directors: Alex. Nimick, Alex. M. Black, Chas. K. Reppert, Jno. W. Chalfant, C. L. Painter and Chas. S. Weaver. A resolution was passed which favored a partial payment of what moneys were now on hand on account of the preferred stock.

The offices of the Pittsburgh Electro-Plating Company and P. H. Laufman & Co., Limited, proprietors of Apollo Sheet Iron Works, at Apollo, Pa., have been removed from the McClintock Building, Pittsburgh, to room 605 Lewis Block, in that city.

The Pittsburgh Metallurgy Company of Pittsburgh have closed a contract with the Johnson Company of Johnstown, Pa., for three Smith Furnaces, with working hearths 9 x 26 feet in the clear, and six double-breasted Smith Gas Producers.

## Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date May 4, say: Besides further emphasizing the dullness which exists in the Pig-Iron market, there is very little to remark, except that the street-car strikes and the strikes of the car companies in this locality have been satisfactorily settled, and labor troubles, it would seem, would cause no further serious annoyance in the near future. The transactions in Lake Superior Charcoal Iron have been considerable in tonnage, but prices cannot be said to have been more than fairly maintained, as we learn of some deals having been made at prices considerably under present quoted market. The large crop in the West and general settlement of labor troubles make manufacturers more sanguine that the worst part of the year is over, and that a large volume of

business, and at far better figures, will be shown in the very near future, and continue during the balance of the year. Prices are quotable as follows:

Lake Superior Charcoal, all numbers.....	\$18.50 @ \$19.00
Lake Superior Coke, Bessemer.....	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.....	18.00 @ 18.50
Ohio Blackband (40 per cent.).....	18.00 @ 18.50
Southern No. 1.....	16.25 @ 16.75
Southern Gray Forge.....	14.75 @ 15.25
Jackson County (Ohio) Silvery.....	18.25 @ 18.75

## Louisville.

LOUISVILLE, KY., May 4, 1891.

**Pig Iron.**—There has been active buying during the week, with some fluctuation in prices, sales being made on a basis of \$10 @ \$10.25 for Gray Forge, Birmingham, though one transaction was made at as low as \$9.70. This arose from the seller not being aware of the changed conditions of the market, which has become decidedly active. A number of buyers who usually purchase 60 days later are now in the market for their season's supply, and the amount of Iron inquired for is quite large. Prices, while much firmer, have made no special advance, and Iron can be bought for delivery throughout the year on a basis of \$10 @ \$10.25 for Gray Forge, Birmingham. Charcoal Irons have also been in greater demand, and several lots that had been offered unsuccessfully during the last two or three weeks have been disposed of, and it is impossible now to secure bargains upon the same basis. Inquiries have been more marked than at any time since the beginning of the year. The market to a certain extent, however, is based upon crop prospects rather than anything so far realized, and the activity was started by heavy buying by agricultural companies, who are now anticipating the future and believe that their orders for finished material will be very heavy. We quote same as last week:

Southern Coke, No. 1 Foundry.....	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry.....	13.75 @ 14.25
Southern Coke, No. 3 Foundry.....	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry.....	16.00 @ 17.00
Southern Car Wheel.....	17.00 @ 20.00

## New York.

Office of The Iron Age, 96-102 Reade street, New York, May 6, 1891.

**American Pig.**—Current business is small, buyers acting in a very conservative manner. Prices continue without improvement, in spite of the light production in all parts of the country. An interesting recent transaction is the sale by a furnace on the Hudson River of 5000 tons of Bessemer Pig to Connecticut malleable iron works, at private terms. Northern brands are quoted \$17 @ \$18 for No. 1, \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Iron sells at \$16.50 @ \$17.25 for No. 1, \$15.50 @ \$16.25 for No. 2, and \$14 @ \$14.50 for Gray Forge. The burning of the engine house of the Troy Iron and Steel Company is expected to lead to outside purchases of Bessemer Pig. The two furnaces in blast were making about 10,000 tons of Pig a month.

**Spiegeleisen and Ferromanganese.**—Importers claim that prices have been considerably advanced abroad, the German works declining to name figures on account of the troubles in the coal trade, while the English makers ask 87/, which makes cost considerably above recent nominal quotations. In the absence of any demand whatever in this country little interest is shown in the matter. Ferromanganese is dull at \$63.50 @ \$64.

**Billets and Rods.**—There has been a little business in domestic Billets, which

we quote \$27.50 @ \$28, delivered. We note, however, that some of the leading mills quote considerably above this. Thus one mill, asked for a price on 35 carbon Billets of somewhat unusual form, asked \$32.50 at mill, while another demanded \$36. There has been considerable comment lately on the heavy rejections, some time since, East and West, of Billets made by a very prominent Pittsburgh mill. In some cases the Billets have been taken after a heavy allowance had been made. In others they were rejected absolutely and had to be replaced. We are informed that the concern in question has acted in the most liberal manner in the matter, and that the trouble first experienced has been overcome. Wire Rods are dull at \$38 @ \$38.50, at mill. The Troy Steel and Iron Company inform us that the fire at the furnaces will cause no withdrawal from the Steel market.

**Steel Rails.**—The most interesting feature of the week has been the rumor that an order for 5000 tons of Rails has been taken by an Eastern works which has not rolled any Rails for some years and which is not a member of the association. The purchaser is reported to be a New York road. We note also that an Eastern road has availed itself of an earlier option to take 4000 tons, and that a Western mill reports the sale of a 2000-ton lot. Quotations remain unchanged at \$30.75 at tide-water, \$30 at Pittsburgh, and \$31 at Chicago.

**Rail Fastenings.**—The Spike manufacturers were unable to agree at their meeting in this city last week, the opinions being divided as to advancing the price to \$2.25 or not, the majority apparently not believing in the possibility of holding at such a figure. We quote Fish Plates 1.70¢ @ 1.75¢, delivered; Bolts 2.65¢ @ 2.75¢, and Spikes 1.90¢ @ 1.95¢.

**Manufactured Iron and Steel.**—Earlier in the week two contracts of magnitude for buildings were closed, but since then the strike of the house-smiths has brought current local trade to a practical standstill. Prices remain low. We quote Angles, 1.95¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

**Old Material.**—Old Rails remain stagnant, only a small sale of American Tees being reported at \$21.75.

## New York Metal Exchange.

The following sales are reported:

FRIDAY, May 1.	
25 tons Tin, September.....	20.00¢
25 tons Tin, May.....	19.80¢
25 tons Tin, May (second half).....	19.80¢
MONDAY, May 4.	
25 tons Tin, May.....	20.00¢
10 tons Tin, June.....	19.90¢
(Sellers' right to double.)	
10 tons Tin, May.....	20.05¢
TUESDAY, May 5.	
25 tons Tin, May.....	20.05¢
20 tons Tin, spot.....	20.35¢
25 tons Tin, June.....	20.10¢
25 tons Tin, May.....	20.10¢

## St. Louis.

OFFICE OF The Iron Age, 214 N. Sixth st., St. Louis, May 4, 1891.

**Pig Iron.**—The market continues much in the same condition as last noted. Prices are firming up to some extent, and, while occasionally low figures are accepted, the general market is in better shape. The demand for Bessemer Iron has been light, and the stocks of this grade on hand at this point are heavier than they were a few months since. Buyers are beginning

to take more interest in the market, and it is quite probable that those whose stocks are nearing low-water mark will shortly be heard from. Foundry Irons are scarce, while Forge Irons are in good supply. Statistics received from furnaces show that they have sold up in some cases enough of their product to take from two to three months to even up. Of course some of these sales are for delivery during the year, but it proves that once the demand assumes any respectable proportion, a hardening of prices is likely to follow. The feeling is one of extreme hopefulness, and sellers are endeavoring to impress consumers with the fact that Iron at present prices is a safe investment. Consumers, however, following the policy which they have lately adopted, are buying only as they find their needs require, and should the market take a sudden turn upward the furnacemen will more than likely reap the benefit. Sales during the week have been in moderate quantities, but make in the aggregate a satisfactory week's trade. We quote as follows for cash f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.50 @ 14.75
Southern Coke, No. 3 Foundry.....	13.75 @ 14.00
Gray Forge.....	13.25 @ 13.50
Southern Charcoal, No. 1 Foundry.....	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry.....	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	18.00 @ 19.00

**Bar Iron.**—The market continues to improve. Mills do not appear so anxious for orders, and in some cases are advancing their prices. The outlook is considered promising for an early improvement in prices, which are to-day as follows: Lots from mill command 1.65¢ @ 1.67½¢, delivered on cars at East St. Louis. Jobbers quote 1.80¢ @ 1.85¢, according to quantity.

**Barb Wire.**—The increased trade noted in our last report continues. The pleasant weather at present prevailing has assisted materially in this direction, and out of town buyers have been sending in their orders asking for immediate shipment. Prices continue as heretofore: Painted, 2.95¢; Galvanized, 3.50¢; carload lots 10¢ @ cwt. less than above prices.

**Wire Nails.**—This department continues to show a downward tendency, so far as prices are concerned. The demand is light, and unless some improvement is shortly felt it is questionable if the present prices can be maintained. We quote as follows: Carload lots from mill command from \$2.05 to \$2.10; small lots from store \$2.20 @ \$2.25.

**Cut Nails.**—In sympathy with Wire Nails, prices are reaching a very low point. Carload lots are quoted at \$1.65 @ \$1.70, f.o.b. cars St. Louis.

Eisemann Brothers announce that they have established a metal department at 303 and 305 South Main street. They make a specialty of the purchase of all kinds of refuse containing metal.

## Coal Market.

The Anthracite Coal agents report a firmer tone during the last fortnight, so that the circular prices are scrupulously maintained. There is still an indisposition either to sell or buy in large blocks at present quotations, as operators talk of the probability of better prices after June 1, while consumers hold off for a possible reduction, usually expected at the beginning of warm weather. Strikes in the mining regions are no longer regarded as



important, confidence being felt that their influence is transient and will soon cease to be a disturbing factor. These views are held respecting prospects both in the Anthracite and Bituminous departments. Reading is working on full time, but many collieries will remain quiet until the market is stronger.

Individuals are selling Broken and Chestnut at \$1.35; Egg, \$3.45, and Stove, \$3.00, f.o.b., which are the net of circular prices, commission off. The companies are not making prices for future delivery, though they are 25¢ @ 35¢ higher than a year ago.

The total amount of Anthracite Coal sent to market for the week ending April 25 was 643,221 tons, about the same that was shipped in the corresponding week last year. The total amount of Anthracite mined thus far in the year 1891 was 10,296,813 tons, compared with 8,548,746 tons for the same period last year, an increase of 1,748,067 tons. The Reading's shipments last week aggregated 225,000 tons, and it is reported that in consequence of the Reading's having shipped more than its allotted tonnage the Lehigh Valley has discontinued its policy of restriction. The Pennsylvania Railroad has shipped for the year 4,487,000 tons, an increase of 602,000 tons. The Beech Creek output for the week was 73,449 tons; Huntington and Broad Top tonnage, 44,216 tons.

Nos. 1 and 4 coal breakers of the Kings-ton Coal Company, at Edwardsville, Pa., together with several boiler and machine houses, were totally destroyed by fire. Estimated loss, \$250,000.

The average of anthracite prices in Schuylkill County in April was \$2.246, compared with \$2.22 in March and \$2.167 in April last year.

Percy B. Heilner has been appointed as New York sales agent of the Philadelphia and Reading Coal and Iron Company. Mr. Heilner has been connected with the Coal trade for many years, and for the past 15 years has been with the firm of Robinson, Hayden & Co.

## Financial.

Business revival is slow, but the general situation is hopeful. The speculative spirit has undergone a decided reaction, affecting alike stocks and grain. The uncertainties connected with labor difficulties with which May-day was ushered in have in a large measure disappeared. Troubles in the bituminous coal and coke regions, it is believed, will soon disappear. At any rate operators express confidence that disturbance will be of short duration. The money question has been again brought into prominence by the exports of gold in connection with the issue of new paper currency, which has only silver dollars pledged for its redemption. The suggestion from official sources that in an emergency the Government might encroach upon the "gold reserve" has been in some quarters regarded as a menace to specie payments, it being assumed that "every bank would suspend" under the conditions supposed. The \$21,000,000 in subsidiary coin, being only legal tender for \$5, can hardly be counted as "available cash;" nor can silver certificates be issued, as Mint Director Leach intimated, against silver bullion for which Treasury notes have been issued. It is to be observed, moreover, that the Government receipts from all sources during April were \$26,045,831, as against receipts in April, 1890, of \$34,017,041. The principal falling off is in Customs—from \$19,907,466 a year ago to \$12,591,990 last month, due to free sugar. Despite some unfavorable indications the

Treasury is pronounced impregnable and bankers anticipate an early return of gold in exchange for produce and securities. Crop reports continue to be favorable, except in the Northwestern wheat region, where unseasonably cold weather prevails. The Kansas Agricultural Bureau reports an increase of 38% in wheat acreage in Kansas, and the Spokane Falls Chamber of Commerce reports 25% increase in Washington.

In New York on Saturday wheat dropped nearly 4¢ a bushel on lower cables and free selling, together with liberal receipts in the West, and on Monday the decline continued. Corn also tumbled. Large receipts of India wheat deepened the depression. Provisions were dull and lower all around. Notwithstanding the decline grain room to England was not wanted, but two cargoes cleared for Portugal. Some 5000 bales of cotton were engaged for Liverpool.

Stocks were active and higher early in the week, but realizing sales and bearish pressure, encouraged by gold exports and unfavorable rumors, brought about a reaction after Thursday, and the market was irregular and generally lower on Friday and Saturday. The decision of the Canadian Pacific and the West Shore to abandon the cut rate made by the "Soo" from the seaboard to St. Paul was regarded favorably, and confidence was felt that definite action would be taken on Wednesday by the Traffic Association with reference to Canadian railroads and the Interstate Commerce law. On Tuesday the market was irregular and feverish.

United States bonds were quoted as follows:

U. S. 4½s, 1891, registered.....	100
U. S. 4½s, 1891, coupon.....	101
U. S. 4s, 1907, registered.....	120½
U. S. 4s, 1907, coupon.....	120½
U. S. currency 6s, 1895.....	113

The money market is firmer. Time money on good collateral is quoted at 4% for 60 days to three months, and 4½ to 5% for four to five, and 5 to 5½ for six to eight months. Offerings of prime commercial paper continue limited. The demand is somewhat urgent from Boston. Only a few New York City banks are doing anything, except where bargains are offered. The trust companies are purchasing to some extent. Quotations for first-class paper remain at 5% for 60 to 90 days and 6 @ 7% for longer dates.

The weekly bank statement was unexpectedly favorable, keeping in view the continued heavy shipments of gold. Saturday's shipments, however, did not figure in the return. There was an increase in reserve of \$468,175, which brings the surplus up to \$7,443,300 above legal requirements. A gain of \$1,030,900 in legal tenders helped to offset a loss of \$1,309,300 in specie. A contraction in loans of \$2,553,100 accounts for the gain in the surplus. Gold to the amount of \$4,550,000 was shipped during the week, of which \$200,000 went to Cuba and the remainder to London and the Continent of Europe. A London cable, 3d inst., said the foreign drain of gold had ceased. Per contra, it is stated that the Russian financial agents have notified the Bank of England that a large part of their gold deposits will soon be wanted.

The posted rates for sterling are \$4.86½ @ \$4.90.

Most departments of merchandise preserved a healthy tone and at a fair range of prices. The demand for dry goods showed some improvement, but buyers were still careful to limit their operations to actual wants in sight as regards the present season. For the fall trade there was more inquiry. A little while ago the situation was very uncertain, and very low prices were anticipated for cotton goods, especially as cotton was quoted lower than for many years, but there is a favorable change. The usual early transactions for

slow-water shipment to the northwest are only awaiting a settlement of freight rates along the line.

Bar silver closed in London at 45½d. 3/4 ounce, and in New York at .99a .99½ 3/4 ounce.

The fall of the North River Bank last autumn was followed this week by the arrest of Edward E. Gedney, the president of the bank, and Frank R. Ingersoll, its cashier, upon a charge of making a false statement concerning the resources of the bank for the quarter ending June 14, 1890. The "specie on hand," it now appears, was in fact the amount represented by \$72,000 of unsecured paper. Another sensation was the arrest of President G. W. Marsh and the assistant cashier of the now defunct Keystone Bank of Philadelphia, at the instance of the bank examiner, to answer a similar charge of conspiracy and falsifying reports.

Bank exchanges of 59 cities last week, show a decrease of 9.6%. Outside of New York the decrease was 4.7%. New York decreased 12.4%. Boston 7.6%. Chicago increased 9.8%. Bank clearings for April show a decrease from April's total last year of seven-tenths of 1%. The total for March, 1891, was 9.5% smaller than in 1890.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, May 6, 1891.

The improvement in the Scotch warrant market that started in last week has made further progress, stimulated in a good measure by some alarm on the part of the "short" interest, due to improvement in the consumptive demand and steady depletion of stocks in the face of further additions to the number of furnaces in blast. In Scotland 57 furnaces are now working, an increase of three during the past week. Cleveland warrants have also improved, partly in sympathy with the advance in Scotch and partly under the influence of the Iron-masters returns showing a decrease of 18,787 tons in their stocks. Increased shipments have figured prominently in cutting down the surplus, but the damping down of three furnaces has assisted to some extent. Hematites have advanced with the remainder of the market. Improvement is noted in the consumptive demand for most varieties of Pig Iron, but buyers hold back somewhat in anticipation of lower prices. Latest transactions in warrants were at 48/9 for Scotch, 39/9 for Middlesborough and 49/ for Hematite, showing a slight decline on the latter.

Pig-Tin prices have advanced about £1 and the market is strong, chiefly on brisk demand for near future deliveries. The decrease that has taken place of 1100 tons in the visible supply and light shipments from the East last month have also served to impart a better feeling. Spot stocks are in strong hands, and consumption continues on a large scale.

Copper is steady at about £1 advance. The improvement in the statistical position has stimulated speculation, and reduction in the available stock of furnace material, due to non-arrival of shipments of Anaconda Matte, together with dimin-

ished shipments from Chili, have also had more or less influence. Stocks show a decrease of 859 tons. Chili charters the last half of last month are advised as being only 700 tons. Transactions in furnace material include 400 tons Montana Matte on private terms and 114 tons Anaconda at 9/9, delivered at Liverpool.

A larger business has been done in Tin Plate and prices are steadier. A new works is building at Burrypoint.

Dealers in Old Iron report a better demand, and holders are asking somewhat higher prices.

**Scotch Pig Iron.**—There is little change in the movement in makers' Iron, and prices are still irregular, but generally firmer:

No. 1 Coltness, f.o.b. Glasgow.....	63/
No. 1 Summerlee, " " " " " "	60/6
No. 1 Gartsherrie, " " " " " "	60/6
No. 1 Langloan, " " " " " "	63/
No. 1 Carnbroe, " " " " " "	50/
No. 1 Shotts, " " " " " "	62/
No. 1 Glengarnock, " " " " " "	60/
No. 1 Dalmellington, " " " " " "	53/
No. 1 Eglinton, " " " " " "	51/
Steamer freights, Glasgow to New York, 1/;	
Liverpool to New York, 10/.	

**Cleveland Pig.**—Demand continues light, and while warrants have advanced, makers quote 38/9 for No. 3 Middlesbrough, f.o.b.

**Bessemer Pig.**—Demand is rather more active and the market firmer. Makers quote 50/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegeleisen.**—Business has been fair and prices are steady. English 20 % quoted at 95/, f.o.b. shipping port.

**Steel Rails.**—Prices are very steady and there is quite a good demand. Heavy sections quoted £4. 12/6, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The movement is slow, and prices are somewhat irregular. Makers ask £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—No change in prices, and the demand moderate. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—The market remains very quiet, with prices as before. Bessemer quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—Demand is very fair, but holders ask higher prices and little business passes. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

**Scrap Iron.**—There is a fair demand, and prices are steady. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

**Crop Ends.**—Very little doing, and prices without change. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

**Tin Plate.**—Business is slow, and there are sellers of Cokes at reduced prices. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	19/ @ 19/3
IC Bessemer Steel, Coke finish....	16/3 @ 16/6
IC Siemens " " " " " " " "	16/6 @ 16/9
IC Coke, B. V. grade.....	16/ @ 16/
Charcoal Ternes, Dean grade.....	16/9 @ 17/

**Manufactured Iron.**—Demand does not improve and prices are still rather in buyers' favor. We quote, f.o.b. Liverpool:

Staff. Marked Bars.....	£ s. d. 8 10 0
Common " " " " " "	6 7 6
Staff. Bl'k Sheet, singles.....	6 17 6
Welsh Bars (f.o.b. Wales)....	5 15 0 @ 6 0 0

**Tin.**—The market somewhat irregular to-day, with Straits quoted at £91. 10/, spot, and £91. 5/ for three months' futures.

**Copper.**—Very steady market at the close. Merchant Bars quoted at £52, spot, and £52. 10/, three months' futures. Best Selected, £56/ 10/.

**Lead.**—Demand is running fair, and prices are steady. Quoted at £12. 12/6 for Soft Spanish.

**Spelter.**—The market is quiet but firmer at £22. 17/6 for ordinary Silesian.

## Metal Market.

**Pig Tin.**—Prices have moved gradually upward during the past week, with the ultimate result a rise of about 40¢ @ 100 lb. This change is due in a good measure to a steady advance in the London market, at which center a decrease in the visible supply and light spot stocks have had a pronounced influence. It would appear, however, that the large supply in New York is well taken care of, for the time being at least, somewhat to the surprise of operators, who had figured upon something in the nature of pressure to realize and a break in prices to a point nearer to the 19-cent mark. Local speculation has been on a moderate scale, but purchases for trade and consumptive account make a good showing, helped along as they were at prices unusually close to the net cash figures for 10-ton lots. On Wednesday the local market was firm, although London cables came lower. On the Exchange 100 tons were sold at 20.10¢ for May and June and 20.15¢ for September delivery. Spot stock was valued at 20.10¢, net cash, for 10-ton lots and 20½¢ @ 20½¢ regular for jobbing quantities. Supplies here on the 1st inst. were about 2200 tons and the quantity afloat 2450 tons, against a total of 3750 tons a month ago. Holland supplies are also larger, but a falling off in English supplies brings the world's visible supply down to 12,187 tons, against 12,866 tons on April 1.

**Copper.**—Very few new facts come to the surface, but those few reflect a rather weaker market. At 13½¢ the offering of Lake Superior Ingot is quite free. At 13½¢ a good many lots could be picked up, and negotiations entered into latterly indicate that 13½¢ would be accepted for some few brands. Consumers are very indifferent buyers, however, and 13½¢ seems to have no more attraction than does 13½¢ as an inducement to freer purchases. As this would indicate, buyers are still extremely conservative, shaping their operations to the movement of manufactured goods, which at present is by no means lively. Other varieties of the metal are affected by practically the same conditions, and prices, while showing no radical change, are more or less in buyers' favor. Over 12½¢ for Arizona Ingot or over 11½¢ for ordinary casting Copper is realized only on small parcels.

**Pig Lead.**—In the local market business has been on a moderate scale, and reports from the West indicate a falling off in the movement there. The market as a whole thus presents a rather dull appearance, and while no depreciation in values

can be recorded, the tone is not as good as it was a week ago. Single carload lots would probably bring 4½¢ here, but for larger quantities there are no buyers at that price.

**Spelter.**—No improvement in the demand for this metal has taken place and sales involving more than single carload lots to either Brass manufacturers or galvanizers are the exception. Prices are barely steady at 4.85¢ @ 4.90¢ for Prime Western and 4.80¢ for Common, for early shipment.

**Antimony.**—Demand has been wholly on small lots and prices are barely steady. Hallett's quoted at 15½¢, LX at 15½¢ and Cookson's at 16½¢, in wholesale quantities.

**Tin Plate.**—The market has been very quiet throughout the week. Deliveries on late purchases more than supply the requirements of large consumers and from other quarters orders are invariably small, as well as few in number. Prices still tend more or less in buyers' favor. Importations continue very heavy. In March and April a total of 542,593 boxes arrived here. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.20; J. B. grade, do., \$5.27½; Bessemer do., \$5.23½; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85; IX basis, \$6.85. IC Charcoals—Melyn grade, \$6.12½; for each additional X add \$1.50; Allaway grade, \$5.80; Grange grade, \$5.90; for each additional X add \$1. Charcoal Ternes—Worcester, 14 x 20, \$5.50; 20 x 28, \$10.50; M. F., 14 x 20, \$7.20; do., 20 x 28, \$15; Dean, 14 x 20, \$5.05; do., 20 x 28, \$10.10; D. R. D. grade, 14 x 20, \$4.85; do., 20 x 28, \$9.75; Mansel, 14 x 20, \$5; do., 20 x 28, \$9.85; Alyn, 14 x 20, \$5; do., 20 x 28, \$10; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$10.50. Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9.40; Abercarne grade, 14 x 20, \$4.70; do., 20 x 28, \$9.35.

**Warrant Stocks.**—The American Pig-Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, April 14, 1891.....	53,500
Put in yard for 21 days ending May 5, 1891.....	.....
Total.....	53,500
Withdrawn 21 days ending May 5, 1891.....	2,300
Net stock in yard, May 5, 1891.....	51,200

## Imports.

### Hardware, Machinery, &c.

Aich, Hermann, Enameled Ironware, cs., 82  
 Anderberg, L. J., Ironware case, 1  
 Booshardt, H. & Co., Mach'y, pkgs., 5  
 Boker, Hermann & Co., Arms, cs., 18  
 Brunner W., Mach'y, pkgs., 5  
 Coombs, Crosby & Eddy, Agricultural Implements, case, 1  
 Downing, R. F. & Co., Mach'y, cs., 2  
 Freetadins, John, Mach'y, cs., 10  
 Frasse, Peter A. & Co., Wire, cs., 8  
 Godfrey, C. J., Arms, cs., 12  
 Graef Cutlery Co., Cutlery, cs., 4  
 Hampton, J. W. & Co., Mach'y, pkgs., 18  
 Hammacher, S. & Co., Nails, cs., 19  
 Huber, J. M., Mach'y parts, cs., 6  
 Ismay, J. Bruce, Mach'y, pkgs., 2  
 Kennedy & Moon, Mach'y, cs., 50  
 Lau, J. H. & Co., Arms, cs., 4  
 Lucas, Thompson & Co., Machines, cs., 45  
 Meacham Arms Company, Arms, cs., 13  
 New York Plush Company, Mach'y, cs., 78  
 Perlin, L., Mach'y, pkgs., 5  
 Pim, Forwood & Co., Hdw., cs., 34; Anchors, 6  
 Pitt & Scott, Hdw., cs., 2  
 Richards & Co., Locks, box, 1  
 Sellers, W. B., Mdee, cs., 7  
 Sanderson & Son, Mach'y, cs., 13  
 Schoverling, D. & G., Arms, cs., 15  
 Sheldon, G. W. & Co., Mach'y, cs., 9  
 Stoddard Plate Glass Company, Iron work, cs., 51  
 Wright, Peter & Co., Mach'y, cs., 3  
 Ward, Jas. E. & Co., Hdw., pkgs., 500; ditto cs., 1  
 Wiebusch & Hilger, Hdw., pkgs., 2; ditto, cs., 10;  
 Anvils, 90; Arms, cs., 6  
 Wysong, C. L. & Co., Arms, cs., 29



# HARDWARE.

## Condition of Trade.

**T**HE IMPROVEMENT noted in our last issue still continues, and, as indicated in the special reports given below, a larger volume of business is being done in most of the jobbing centers. It will, however, be observed that in some quarters there is still complaint of inactivity of trade, owing to special causes to which our correspondents allude. As a rule, however, jobbers are pretty busy in taking care of their spring trade, the orders being referred to as covering general assortments of Hardware, while seasonable specialties constitute a considerable proportion of the business. Manufacturers in certain lines are well occupied with orders, but others still complain of the sluggishness of trade, as the jobbers have not thus far found it necessary to replenish their stocks. The improved feeling and perceptibly better tone of the market give, however, promise of satisfactory trade during the remainder of the season. There has been no important change in the matter of prices, some staple goods continuing irregular and low, but as a rule prices are well maintained, which, in view of the dullness of trade during the past month or two, is a matter for congratulation. The financial situation is fairly satisfactory, though there continues to be considerable complaint in regard to collections.

### Chicago.

(By Telegraph.)

The demand for Shelf Hardware has been quite good the past week, with business increasing gradually as one bright day followed another. Garden Tools have been moving very freely, as well as Steel goods and other seasonable articles. In fact, the jobbers note more difficulty in getting some kinds of goods than in selling them. The Tinware trade has also been much better of late, and the indications now point to a very fair business for the season. Dairy Trimmings are still in light demand, on account of the high cost of feeding stock, which makes dairymen economical in purchasing fresh supplies. Roofing Tin Plates are in very active demand at present, but prices are not as strong as the condition of trade would seem to warrant. Collections are only fair.

### St. Louis.

(By Telegraph.)

Jobbers of Hardware report a continued improvement. Staple goods are moving freely and seasonable articles are in good demand. There is a large demand for Barb Wire and prices are firmly adhered

to. Wire Nails continue weak and inactive at from \$2.20 to \$2.25 from store. Vehicles and Agricultural Implements are selling in large quantities. Tin Plates are a trifle firmer than one week ago, but Nails are weak, and small lots from store are quoted at from \$1.80 to \$1.85.

### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—The business outlook at points tributary to this market looks very bright indeed. Sufficient moisture has fallen to insure a good start to the crops. All lines of trade report increased sales, Hardware being no exception to the rule. The demand for seasonable goods is large, and prices as a whole are being maintained. The advance on Barb Wire made by manufacturers has been generally maintained in these markets. Collections are very fair, being in excess of last year.

### Omaha.

**LEE-CLARKE-ANDRESEN HARDWARE COMPANY.**—With the advent of May the most noticeable and at the same time the most important feature, so far as concerns business and financial circles, is the rapid return of confidence. The feeling of uncertainty and insecurity which took possession of the business world toward the close of 1890 has disappeared from Omaha, and all classes of business men are not only looking forward to much better times, but they are commencing to realize that the better times are here already. It is not expected that money will be plenty with the farmers until after a crop is harvested, but with good prospects ahead they will be able to obtain credit sufficient to keep trade moving. As a rule a hopeful view of the situation is entertained by almost all jobbing houses here, and in most cases good reasons are advanced for the confidence expressed, the main factors of a prosperous spring and summer being generally regarded as quite as well assured as can be reasonably expected at this season. Only occasionally a weak house grunts and complains, but a solitary case of this kind represents but a single opinion, usually from its own peculiar standpoint. The general declaration is that business is better, and the increased activity to be seen on all sides is positive evidence of our assertions. As a rule little difficulty is experienced in keeping up collections, which is a good indication that money is easier in the rural districts.

### Baltimore.

**CARLIN & FULTON.**—We note an improvement in trade, the result probably of the fine weather which we have been enjoying for the last few weeks, though the farming community is now complaining of the lack of rain, while but a short time ago the dissatisfaction was as great on account of its superabundance. Notwithstanding the greatly increased use of reapers and mowers, there is still

yearly a large demand for Scythes and Grain Cradles, and with the prospects of good crops of both hay and wheat this year we suppose the sales of harvest tools will be fully equal to those of previous years. The pests of summer, the fly and the mosquito, give also opportunities to the Hardware trade in the sale of Fly Fans, Fly Traps, Window Screens and Doors, Wire Cloth, which every season show a largely increased consumption. Barbed Wire is selling quite freely and the manufacturers seem this year to have a good control of the prices. The Nail market is not especially active and prices remain unchanged. Collections are but fair, there being but little in the country at present in the way of farm products in the hands of the producers from which to realize money, nor will there be until the growing crops are harvested and sold.

### Cleveland.

**THE W. BINGHAM COMPANY.**—Business during the past month has been unusually brisk, the demand for seasonable goods being larger than for the same time last year. Barbed and plain fence Wires have been scarce, mills having been unable to make prompt shipment, owing to an unusually large demand from this point. As manufacturers in other places have been behind in shipping, not having the Wire on hand, a good many orders have been diverted to this market to get prompt shipment, thus clogging the Cleveland mills. The demand for Nails for the past month has been moderate, as retail dealers placed orders early in January and February, and have not wholly worked off those stocks as yet. Steel Cut Nails are held at \$1.70 and Wire Nails at \$2.15 from stock. Travelers are sending in good assorted orders, with requests to "ship quick," indicating that stocks are light, and that on account of the fine weather retail trade is brisk. The demand for Garden Tools, Lawn Mowers, Wire Cloth, Fence Wires, Refrigerators, Lawn Hose, &c., is unusually good for this time of the year. On the whole, trade has been satisfactory, and the outlook for a continuance of same is very good. Collections are fair.

### Louisville.

**W. B. BELKNAP & Co.**—Business is moderately active, with no changes in values to speak of. While prices do not exhibit increasing strength, at the same time they are stubbornly maintained, and the general large consumption makes away with most of the output of the mills as at the present running. The demand for Wire has been exceptionally good all through the season. The fine weather of April having been especially conducive to farming operations, makes it dull for the jobber for the time being. The crop prospects were never better, however, and we are quite content to await the issues.

The very low price at which all staples are selling must induce an immense consumption. It looks to us as though the market had backed off the full length of its tether for a fresh start as soon as the crops begin to be realized upon.

#### Portland, Ore.

**FOSTER & ROBERTSON.**—Owing to the almost constantly prevailing rains for the last ten days, trade has fallen off in a large measure, so that the month of April, which promised a fine increase in the volume of business over the same month last year, will just about hold its own, but while the rain has temporarily interfered with outside improvements it has been of immense value to one of our principal industries—the logging interest. For the last two years or more loggers have been piling up logs in and along the many small streams west of the Cascades, expecting that just such rains as have fallen of late would cause the streams to rise and thus enable them to get the logs into market. After two years of disappointment, relief has at length come, and now if we can have but a moderately active Lumber market, prosperity will come to many localities that have been suffering under a measure of depression.

The inactivity in and uncertainty in regard to railroad building is about the only unpromising feature in our business outlook, while the large indebtedness of railroad operators contracted last year, and which still remains unpaid, coupled with very remote prospects of payment and a possibility of heavy losses, constitutes one of the largest factors in the financial depression resting so heavily upon a portion of the wholesale trade in this part of the world. There has been no special activity in any particular line of goods during the last month, orders being very generally assorted. Prices have remained reasonably firm, with no changes worthy of notice.

#### Boston.

**BIGELOW & DOWSE.**—Certainly the Hardware jobbers have no complaints to make of the present volume of trade. The month of May is always the best in the year, and the prospects were never better than they are this month. There has been some fear lest the building trades might make trouble, but since the appointed day, May 1, has passed every one is prepared to believe that the workingmen are disposed to do their share toward the universal prosperity. There was never more building projected than now and the extreme low price of all kinds of Hardware will make that part of a building cost less than ever before. The retail dealers have been busy for the past 30 days or more and shipments of many early orders have been hurried before the time specified for their delivery. The large increase in the sale of made-up Window Screens and Doors for the past two or three years should materially affect the sale of Screen Wire, but it does not. It would also seem that the sales of Poultry Netting in the past three or four years were enough to furnish a separate yard for every hen in New Eng-

land, and still the sale is as large as ever. When business is brisk we do not hear much cutting of prices; still everything is sold on small margins and many goods at lower price than ever before. When trade is quiet prices are cut and these prices rule for the season. This is particularly the case on seasonable goods. Each season the dealers start out earlier and the fight becomes harder and more fierce. The final result of this forcing of sales is not pleasant to contemplate. Collections are still behind what they should be, but they should be better this month.

#### New Orleans.

**A. BALDWIN & Co.**—There is no improvement in the situation in this section of the country. The long drought seems to have discouraged the planters, and has the effect of making it very quiet in business circles, more so than we would like to see it. Our people report the same condition of affairs throughout the Southwest, but are anticipating a better feeling during the coming month.

#### Philadelphia.

**SUPPLEE HARDWARE COMPANY.**—Business has cheerfully responded to the welcome change in the weather and the improved condition of the roads in many sections, as then intimated in our former letter. There has been a perceptible improvement in trade circles the last two weeks. The volume of trade has not only been greater, but a general feeling of confidence has prevailed. Orders from salesmen have not only been more frequent, but improved orders for a larger line of goods, coupled with the reports of customers generally in better spirits. Mail orders have been greater in number, and, from their frequency, indicate no large stock of goods on the shelves of the purchasers. Prices, as a rule, are well maintained, and a hopeful feeling exists. Jobbing houses have within the last year or two been increasing their line and variety of Hardware carried in stock in order to meet immediate requirements; consequently it has been in isolated cases only, and goods outside of the line usually carried by the trade, where orders have not been promptly filled.

The strike in the coal region is gradually subsiding; some of the furnaces have already gone into operation, and from present indications the cloud that threatened serious results in the bituminous coal region is likely to scatter and for the present, at least, disappear, although the shriek of "Labor trouble" is still in the air, but with less prospects of trouble than was feared ten days ago. The Iron market indicates a firmer tone, without any actual advance in price, but the outlook is encouraging. Railroads that have been postponing their purchases of Rails to the latest possible moment have been buying a little more freely of late. The earnings of the railroads entering our city were not a factor in the bill of purchasing. Their coffers have not suffered. The Trade League, recently organized by the prominent business men and manufacturers of

our city, cannot be considered as quite in harmony with the present discrimination in the rates of freight on goods, both entering and leaving our city, or with the discrimination against our city by the railroads on through tickets to and from the East, South and West.

Money is coming from the interior to the banks more freely than heretofore, although collections by business houses are not what they would naturally expect from the present improved financial condition of the interior towns and cities. Gold continues to go abroad in large quantities, and rates for foreign exchange rule high. Importers feel this keenly, as bills for foreign purchases are now due and payments can no longer be delayed. The high rates of exchange must be placed upon the loss column of profit and loss, as it cannot be safely added to the established selling price of goods at present. The energy and activity displayed in the stock market during the last two weeks has failed in finding a hearty co-operation in our city. Philadelphia appears to be about the only city that has not responded to this speculative call within the last two weeks. The embarrassed financial institutions during last fall have caused others to ponder over the meaning of the word "beware."

To sum up the result of the last two weeks, trade has much improved in volume, prices well maintained, and present activity prevails. The Lawn-Mower season is at its height, and should more than the usual or ordinary amount of rain fall within the next two weeks the stock in the hands of the manufacturers must become very much reduced. Window Screens and Screen Doors are being bought in advance of requirements, and local manufacturers are taxed to their utmost to keep pace with the demands. Exports from our city have been sufficiently large to load outgoing steamers, and a hopeful feeling exists for trade during the months of May and June. Manufacturers of Barb Wire are behind their orders, even to such an extent that many customers are losing sales, owing to the scarcity in this section. Manufacturers of Picks and Mattocks are taxed to their utmost capacity, and Edge-Tool manufacturers are far behind their orders on many kinds of goods.

#### Notes on Prices.

**Wire Nails.**—There is no special change to note in the market for Wire Nails. The demand continues sluggish, and while some business is doing its volume has been only moderate. Many of the largest buyers undoubtedly have stock on hand for their present requirements and are withholding orders for their future needs in the hope that they will be able to procure somewhat lower prices. The tone of the market certainly is not strong, and during the past week or two quotations have fallen off a little. Nails are now to be quoted at \$2 @ \$2.05 for round lots at mill, smaller parcels being obtainable at



\$2.10 @ \$2.15. Retail lots from store are quoted at \$2.25 @ \$2.30.

*Chicago, by Telegraph.*—Wire Nails seem to be in very light demand at present. This is partly because some heavy dealers are well stocked and partly because the trade are still trying to force factory prices to a lower level. They are quoted at \$2.25 from stock in small lots, with concessions to best buyers.

**Cut Nails.**—During the past week there has been no important change in the situation in Cut Nails, prices continuing low and somewhat irregular, according to the views and exigencies of the different mills. Some business has been done, but while some good orders have been placed it is understood that the aggregate of transactions is not heavy and many of the mills are doubtless desirous of booking orders. Quotations are on the basis of \$1.55 to \$1.60 at mill in round lots, small lots from store in New York being held at \$1.75 to \$1.85 for Iron and Steel, with a concession of 5 cents on larger lots. The quotation of \$1.65 to \$1.70, f.o.b. New York, is also made. The local demand for Nails is fair.

*Chicago, by Telegraph.*—Heavy buyers here have placed some large orders, on which they have obtained low price; jobbers further West have also taken good quantities, yet the demand appears light because the general trade continues backward. The factory price to the average buyers is still \$1.75, Chicago, but this is shaded according to the average above base. Small lots continue to be quoted in a regular way at \$1.85 from stock, but concessions are made to best buyers.

**Barb Wire.**—The Barb-Wire market continues in excellent condition, manufacturers maintaining prices with a steadiness and uniformity that is somewhat surprising to many in the trade. The principal irregularity to be noted is that caused by the cutting of prices by jobbers, whose purchases before the advance enable them to slightly undersell the mills. This is, however, a diminishing feature in the market, and prices on Barb Wire are undoubtedly more evenly maintained than for a long time. Some of the mills report business exceptionally good and are unable to supply the Wire as fast as it is called for by their customers, but others are undoubtedly desirous of obtaining orders. The next month or two, it is thought, will test the ability of the manufacturers to maintain prices on their present basis, but in view of the excellent understanding that exists among them it is considered not unlikely that this will be done. Prices are on the basis of \$3.50 for Four-Point Galvanized and \$2.95 for Painted, with the regular abatement of 10 cents for car-load lots and 5 cents for jobbers and railroads; terms 60 days, or 2 per cent. discount for cash in ten days, with delivery at leading points.

*Chicago, by Telegraph.*—The price fixed by the manufacturers in the first week of March is steadily maintained and now jobbers are looking about to replenish

their stock. They are making an effort to push down prices before making contracts, but the manufacturers so far present a bold front, insisting that their existing rates are low enough. It is known that orders are running low with some of them and their backbone will be tested in the near future. Jobbers report a fair trade, but look for an active demand later in the season.

**Stocks and Dies.**—An advance in the price of Blacksmiths' Stocks and Dies has been made by the manufacturers, and the market is regarded as in a more firm condition than for some time.

**Caps.**—A reduction in the price of Percussion Caps has been announced by the Union Metallic Cartridge Company, Bridgeport, Conn., the prices in full case lots being as follows, terms 60 days or 2 per cent. discount for cash in ten days:

Trimmed Edge, Central Fire.....	\$0.35
Ground Edge, Central Fire.....	.47
Musket, Tin Boxes.....	.50

**Wrought-Iron Pipe.**—The Wrought-Iron Pipe trade is in a better condition than it has been for several weeks. At a meeting of the manufacturers, held in New York 29th ult., an advance was made in prices as per the following discounts:

	Discount.
1½-inch and under, Plain.....	55 %
1½-inch and under, Galvanized.....	45 %
1½-inch and over, Plain.....	65 %
1½-inch and over, Galvanized.....	52½ %

In addition to the above discounts small extra discounts are made on large lots.

**Fittings.**—The market in Cast-Iron Fittings is irregular and prices are somewhat demoralized. Brass Goods are also in a similar condition.

**Washita Stone.**—We are advised by George Chase, 107th street and East River, New York, that the agreement which he has made with Pike Mfg Company contemplates the manufacture by him of only a limited quantity of Washita Stone, and that it is not intended that he will manufacture anything besides this Washita Stone. Mr. Chase also advises us that he regards the agreement as one likely to be terminated before long, as the Pike Mfg Company have the privilege of terminating it at six months' notice.

**Lawn Sweepers.**—Thompson Sweeper and Machine Company, Elkhart, Ind., announce the following list prices of their Model Lawn Sweepers, which are subject to a discount to the retail trade of 33¼ per cent. for sample machine and 40 per cent. discount for ten or more machines, f.o.b. Elkhart:

	Each.
No. 1 Model Lawn Sweeper, 16 inch.....	\$10
No. 2 " " " " 18 " .....	12

An illustration of this Sweeper is given in their advertisement on page 131 of this issue, and attention called to its utility and selling points.

**Revolvers.**—Merwin, Hulbert & Co., 26 West Twenty-third street, New York, have reduced the price of their Hopkins & Allen Automatic Ejecting Hinge Revolver, which is now quoted at the following prices.

38 caliber, 3½ inch.....	\$4.50
38 caliber, 5½ inch.....	5.00
32 caliber, 3 inch.....	5.00
32 caliber, 4½ inch.....	5.50

They call attention to these Revolvers as superior to other Pistols of their class, having rebounding locks, folding hammers and square center stems, the barrels and cylinders being made of forged steel and the workmanship the same as that put upon their Merwin, Hulbert & Co. Automatic Revolvers. This announcement is accompanied by a circular giving cuts of these Revolvers and thus illustrating their special features.

**Glass.**—The state of the Glass market might be spoken of as "mixed," in view of the conflicting statements regarding its condition. Reports from Glass factories in the United Glass Company and in the would-be American Window Glass Company indicate small stocks in makers' hands, with predictions of a large shortage before the summer is over. Quotations continue to be made from Pittsburgh at 80 and 10 per cent. discount for carloads and at 80 and 5 per cent. discount for less than car lots. There is no doubt that there is a desire on the part of the manufacturers to get these prices for their output. On the other hand, it is understood that there is a likelihood of the Eastern factories shutting down about June 1, and if such should be the case it is not probable that the idle plants of the United Glass Company will be started this fire. While factories state in private advices that stocks are low, in the same communication they make special inducements to jobbers for immediate acceptance on certain assortments of Glass, which they are anxious to clean up before blowing out. A Western Glass concern, who immediately after the recent advance in the price of Glass quoted 80 and 10 per cent. discount by the box from stock, advise their customers under recent date that they will now sell at 80 and 15 per cent. discount for Single and 80 and 10 and 10 for Double.

The lack of demand for Glass is doubtless largely due to the labor troubles in the building trades; and while there is a hopeful feeling for the future, there seem to be no very encouraging features at present. There has been no change in the prices of French Window Glass or of Plate Glass since our last report, which are as follows: French Window Glass, 75 and 10 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent.; and Imported Plate at discount 60 per cent.

## Trade Items.

**THE CARR HARDWARE COMPANY** have been incorporated at Chicago, with a capital stock of \$40,000, to do a general Hardware business. The incorporators are Christian Carr, Christian Carr, Jr., and Peter Carr, who now own a number of retail Hardware stores in different parts of the City of Chicago, and operate them under the style of C. Carr & Sons.

WE ARE INFORMED that the firm name of White, Packard & Co., Hardware merchants at Marquette, Mich., has been

changed to the Jopling Hardware Company.

THE JOSEPH DIXON CRUCIBLE COMPANY of Jersey City, N. J., are distributing to their friends a pasteboard hanger carrying a design consisting of a broken package of Dixon's American Graphite Polygrade Pencils, which they manufacture. Across the top of the card is the printed inscription "Dixon's American Graphite Pencils," while diagonally across the lower right-hand corner are written the same words. The printing is in varied colors, making a neat and attractive design.

E. C. STEARNS & Co., Syracuse, N. Y., issue an attractive little pamphlet of eight pages, entitled "Points on Lawn Mowers." The desirable features of The Monarch Lawn Mower, which is manufactured by them, are clearly brought out in the description, which is preceded by the quotations "An honest tale speaks best being plainly told."

COLBY WRINGER Co., Montpelier, Vt., and Chicago, Ill., are sending out an artistic metallic end hanger, calling attention to their Premium Wringer. They state that this represents but one of the many efforts that they are constantly putting forth to make the Premium Wringer better known and more generally called for. It is designed for a prominent position in the store, to attract attention and lead to increased inquiry for the Wringer, and it is well adapted for its purpose.

THE TRADE will observe the full-page advertisement of O. L. Hinds, East Highgate, Vt., in which he illustrates the line of Axes which he is putting on the market, emphasizing the point that these Axes are sold only to the retail trade and to one merchant in a place. We are advised by Mr. Hinds that for ten years he has made a specialty of the best Axes, sparing neither labor nor expense to secure their high quality, and his success in this is indicated by the fact that his trade is constantly extending and largely in the sections where lumber is produced. These goods are not put on the market as a low-priced line, but the manufacturer refers to them as having commanded for years the highest price of any Axes on the market, and alludes to the increasing sale under these circumstances as satisfactory evidence of their quality.

P. & F. CORBIN, New Britain, Conn., and New York, under date April 27, issue a circular relating to returned goods of similar import to those of Sargent & Co. and Russell & Erwin Mfg. Company to which we have already referred. They state that no goods sold by them will be taken back or exchanged unless this is necessary on account of error made in shipping or fault in manufacture.

THE TRADE will observe the page which is occupied by the advertisement of Bryden Horse Shoe Company, Catsauqua, Pa., illustrating their leading patterns of Shoes.

M. REINHARDT & SONS, Lincoln, Ill., have recently erected a commodious building for their own use. It is tastefully fitted up, particular attention having been given to the arrangement of goods, so as to display them to the best advantage. They carry a full line of Hardware, Heating and Cook Stoves, Gasoline, Gas and Coal-Oil Stoves, Tinware, Agricultural Implements, &c.

PRATT & LETCHWORTH, Buffalo, N. Y., issue their monthly calendar card for May, on which are illustrations of the Corrugated Steel Fastener for wood work construction, designed to make a perfectly secure joint.

THE GOOCH FREEZER COMPANY, Cincinnati, Ohio, issue a metallic end

hanger relating to their Peerless Ice Cream Freezer, with a large illustration of the same, designed for suspending in stores; also a circular illustrating their Peerless, Giant Peerless, Zero, Pet and Boss Freezers.

HAYDOCK & BISSELL, 12 Murray street and 15 Park Place, New York, announce among the special notices that the last trade sale this spring of Cutlery, Carvers, Butcher Knives, Plated Flatware, &c., will take place on Wednesday and Thursday, May 13 and 14. A desirable variety of the above goods, including a very attractive line of Pocket Cutlery, will be offered for sale, together with a large assortment of Dog Furnishings, Collars, Whips, Leaders, Blankets, &c. The entire catalogue will be sold without reserve.

THE TRADE will observe on another page the advertisement of R. E. Dietz Company, 60 Lighthouse street, New York, in which they call attention to their well known line of Tubular Lanterns, in the manufacture of which they occupy a leading position.

THE ADJUSTABLE SOLDERING COPPER COMPANY, New Bedford, Mass., have changed the style of their firm and are now known as the Wilson & Haven Specialty Company. We are advised that the company have applied for a patent on Line Hook and Elevator Lock, which articles they hope to have on the market before long.

THE AMERICAN VENTILATOR COMPANY, Indianapolis, Ind., illustrate the American Ventilator of their manufacture. It is designed to work a sash balance, or one sash independently of the other, and is referred to as having many advantages over box weights in cheapness, durability and ease of working.

DUNNE CUTLERY COMPANY, 103 Milk street, Boston, manufacturers of the American Filter, an illustrated description of which we gave in our issue of April 30, issue a circular relating to the Filter. They state that the surface exposed to the water in filtering is so large that the force of the water is not perceptibly diminished; that it does not require refilling more than once a year, because by the frequent reversing of the barrel the matter collected is washed away, leaving the filter clean; that by its peculiar formation it discharges the water in a steady unbroken stream, and that by giving the handle a quarter turn the whole force of the water is obtained without filtering, which washes the sides of the filter barrel. They also refer to its neat and attractive appearance.

UNDER DATE May 1 announcement is made that George W. Church, formerly a member of the firm of Montgomery & Co., and James E. Sleight, who has been the traveling representative of that firm, have formed a copartnership under the name of Church & Sleight, and will conduct at 109 Fulton street, New York, the same line of business as that carried on by Montgomery & Co. Henry A. Wilson, who was with Montgomery & Co. for many years in charge of the jewelers' and watch-case makers' supply department, will fill a similar capacity in the new firm.

UNDER DATE May 2 Montgomery & Co., 105 Fulton street, New York, announce that notwithstanding a change in the personnel of the firm on May 1 the firm of Montgomery & Co. still exists at the old stand. They also call attention to their facilities for importing and buying, and the favorable prices which they are thus able to make.

AN IMPORTANT meeting of business men was held in Cleveland, on Friday, April

24, which may result in the establishment of an extensive plant for the manufacture of tin plate. In addition to a number of Cleveland gentlemen there were present Zenas Parmenter and J. W. Williams of Waltham, Mass.; Col. A. L. Conger, F. M. Atterholt and F. A. Seiberling of Akron; J. S. Hollinger, J. S. Cowdrey and Curtis Brothers of Sandusky, Ohio. For some time the erection of a large plant for the manufacture of tin plate at Elwood, Ind., has been contemplated, and the meeting was called for the purpose of taking some definite action. The stock books were opened, and a large number of shares were subscribed for. It is said that work will be commenced on the building in the near future and that when the works are completed they will give employment to about 1500 men.

FULLER BROS., 33 Chambers street, New York, have been appointed exclusive agents for the East for the sale of the Little Giant Potato and Corn Scoops. These goods are manufactured by Bissell & Thornhill, Milford, Mich., and are put on the market with special claims for their utility and excellence.

A NUMBER of manufacturers of Shovels, held a conference in Cleveland on April 24.

OUR READERS will observe the advertisement of Landers, Frary & Clark, New Britain, Conn., occupying a page in another part of this issue, in which their Ice Chisels, with steel blades, are illustrated. Attention is also called to the variety and extent of their other lines, and the suggestion made that their Cutlery and Hardware catalogues will be sent on application.

THE NEW YORK OFFICE of J. R. Torrey & Co., J. R. Torrey Razor Company and Elliott W. Langley has been removed to 85 Chambers street and 67 Reade street, New York.

AFTER HAVING been in the Hardware business for a quarter of a century, J. Yates & Son, Rockford, Ill., have sold out their store to A. S. Hewitt, who will continue the business. Mr. Hewitt is referred to as a young man of experience in this line, and was formerly located in Michigan City, Ind. Mr. Yates, who is now 81 years old, and his son will devote their time to the Stove-Polish and labor-saving specialty business of Yates & Co.

THE TRADE will note the page advertisement of the Meriden Cutlery Company, Meriden, Conn., and 80 Chambers street, New York, which appears elsewhere in this issue. The company are now making a complete line from the cheapest wood handle to the highest price pearl handles, all the goods bearing their name as a guarantee of quality and finish. They state that Table Cutlery of every description equal in quality to any imported goods can be purchased of domestic manufacture.

HIBBERD & SPINNER make announcement, under date of May 1, that they have removed their office and salesroom from 24 Cliff street to more commodious quarters at 9 Cliff street, New York City, where they will carry in stock a full line of Tinners' Tools, Machines and Supplies.

D. SAUNDERS' SONS, Yonkers, N. Y., issue a circular relating to certain infringements upon the reissued letters patent No. 10,021, dated January 31, 1882, for improvements in Pipe-Cutting Implements. They state that they have brought suit in the United States Circuit Court against a prominent infringer, and will pursue the same course with reference to others. The circular also illustrates their Pipe Cutter.



## Philip L. Moen.

THE DEATH of Philip L. Moen, president of the Washburn & Moen Mfg. Company, Worcester, Mass., was briefly announced in our last issue, but we are now able in connection with the excellent portrait herewith given to present a fairly comprehensive sketch of his life. Mr. Moen had been for nearly a year in variable health, and in the latter part of February he went to Florida, hoping thereby to renew his strength. In this, however, he was disappointed. At Winter Park he was seized with a most violent pain in his right side, which disabled him completely and confined him to his room for several days. He then hurried to St. Augustine and there suffered a similar attack, from which, however, he soon recovered. Mr. Moen returned to Worcester on April 6 and devoted as much attention to business as his health would permit. On April 13 Mr. Moen was once more stricken down by the same terrible pain which had visited him in Florida. For several days he was unable to even lie in bed, so great was his agony, but he gradually grew better, and in the latter part of the week was able to take outdoor exercise. Mr. Moen suffered another severe recurrence of the malady on the following Monday, and at noon on the same day a stroke of apoplexy served to intensify his already critical condition. Paralysis set in on the left side and gradually the patient grew weaker, until he expired at 5 o'clock in the afternoon of the 23d inst. His death was painless.

Philip Louis Moen was born in Wilna, N. Y., November 13, 1824. He was the son of Augustus R. and Sophia Ann Moen. His early business life was spent in a Hardware store in New York, where Wire from the Washburn mill in Worcester was sold. Through his business connection he came to know Ichabod Washburn, the founder of the Wire industry in that city, and, through him, his daughter, to whom Mr. Moen was married in 1846. After the marriage, Mr. Moen came to Worcester and took a position as clerk in his father-in-law's mill, and on April 1, 1850, Mr. Washburn took him in as a partner, under the firm name of I. Washburn & Moen. Their business was Wire drawing and Rod rolling. For 41 years he retained his connection with the firm, assisting in the building up of what has become the largest Wire industry in the world. That his first partner fully appreciated his great talent for handling great business enterprises is shown by an excerpt from the diary of Mr. Washburn, written in 1866: "In 1850 I took as partner my son-in-law, Philip L. Moen. In him I have had most efficient aid bringing up the business to its present mammoth size. While he makes no claim to being a practical mechanic, he has by his exactness, promptitude and aptness for business generally supplied a deficiency in myself indispensable to success. He has rare ability over finances, a department of the business for which I never had the taste or the inclination."

In 1850, when Mr. Moen became a partner with his father-in-law, Charles Washburn and his son, the present Charles F. Washburn, and Henry Washburn were all engaged in business in Worcester. In 1865 the Quinsigamond Iron and Wire Works succeeded to the business of Charles Washburn & Son, and in 1866 the concern was incorporated under the title of Washburn & Moen Wire Works, with a capital of \$600,000. In 1868 the present Washburn & Moen Mfg. Company was incorporated, with a capital of \$1,000,000. The present capital, \$1,500,000, having been established in 1869. In the present corporation Mr. Moen was the president and treasurer, Charles F. Washburn vice-president and secretary, his son, Charles G. Washburn, counsel, and Mr. Moen's son, Philip W. Moen, general superintendent and assistant treasurer. The concern now has not only the large

had been trustee of the Polytechnic Institute since 1869, and treasurer of that institution for more than ten years, and so acquitted himself as to merit the highest approbation. He did not mingle much in politics, though on public question he had decided views, which he always freely expressed. His large business engagements caused him to decline many official positions offered him. In social life he was a model of courtesy and urbanity, for his genial disposition and kindly sympathies, and he was ever ready to aid all true moral and benevolent enterprises. He was possessed of broad Christian characteristics. He was a member of the Union Congregational Church, and had been since 1849 one of its deacons and chairman of the Prudential Committee. He was also a member of the Standing Committee. Outside of the church he was a generous giver to the Chicago Theological Seminary, especially the Scandinavian department of that school, and to the leading societies of the Congregational denomination. Closely related to the churches in their modes of work are the Young Men's Christian Association and the Young Women's Christian Association. Through Mr. Moen's influence, to a great extent, the former association obtained its new building. Mr. Moen was the second largest giver toward the structure, his subscription being \$10,000. He was the chairman of the Y. M. C. A. Board of Trustees, and was formerly on the Board of Directors. He contributed largely to the current expenses of the association from year to year. To the Young Women's Christian Association he gave \$2000 for the new building. Mr. Moen had many business relations and connections outside of his own affairs. He had been a trustee of the Central National Bank since October, 1854. He was also elected a trustee of the People's Savings Bank January, 1868, and has been vice-president since 1885. At the time of his death he was a director of the State Mutual Life Assurance Company. The funeral took place on Monday, April 27, and was one of the largest and most



PHILIP L. MOEN.

group of buildings on Grove street, but a big mill at Quinsigamond, and is now erecting another plant near Chicago, Ill. The firm has offices in New York, Chicago and San Francisco. A large part of its prosperity resulted from the purchase of the barbed wire patents, the possession of which it has successfully defended against all competitors.

After the death of his first wife Mr. Moen married Miss Maria S. Grant of Chelsea, Vt. There were no children by the first marriage, but by the second there are Philip Washburn, Sophia and Alice. Mrs. Moen and these children survive him.

Mr. Moen, though not a college graduate nor one claiming special educational acquirements, was a man of broad intelligence and elevated thought, a judicious and active friend of all educational movements and institutions, and ever ready to further his views by liberal contributions. His services for several years on the school committee were highly appreciated. He

impressive ever seen in Worcester. Nearly 2500 of the workmen employed in the Washburn & Moen plant were in the line of march. Among these was Henry Goddard, one of the superintendents of the mill, who headed the column as the oldest man in the company's employ. He has been with them since 1843, when the works employed less than 40 men. Another employee of equal service was Foreman Bean. There were over 300 men in line who have been in the service of the company for more than 30 years. There were numerous elegant floral tributes, and many of the large business places in the city were closed during the services.

Mr. Moen was an exceptionally well equipped business man, of stainless integrity and large capacity, qualities which in connection with his upright character and benevolent and philanthropic life secured for him the high regard in which he was held, as evidenced in the many appreciative tributes which are paid to his memory.

## An Interview with Henry Disston & Sons.

A BRIEF visit to and a brief interview with Samuel Disston at the works of Henry Disston & Sons at Tacony is reported by our Philadelphia correspondent as follows:

The traveler from New York, or *vice versa*, can hardly fail to be attracted by the smart and cosy appearance of a little suburb six miles from Broad street station. This suburb, although within the limits of Philadelphia, is known as Tacony, and practically commenced its career 12 or 14 years ago, when the late Henry Disston secured 600 acres of land with a frontage on the Delaware River of probably half a mile, and extending a mile or more back on gradually rising ground, through as beautiful a piece of country as can be found anywhere. The writer very distinctly remembers being invited to join a picnic which was given by the firm to their employees shortly after the purchase of this property in 1877, and surveying the same property 14 years later deepens the conviction that Henry Disston was a wonderfully far-sighted man, and that his successors have been fully equal to the responsibilities that devolved upon them. At the time mentioned Tacony was a pretty country place, probably not more than a dozen houses there all told, which fronted the majestic Delaware (at this point two to three miles wide), and made a most charming picture. To-day it is none the less pleasing to the eye, but what a difference. Approaching from the city the traveler will notice several acres of beautifully kept park, fronting the west side of the railway, artistically laid-out walks, flower beds, shrubs and shade trees, and fountains in every direction. West of the park and fronting it for several blocks are many really beautiful residences occupied mostly by the Disston employees. In point of fact, no matter what it is that attracts attention in Tacony, and inquiry is made as to who lives there or who built it, the answer is almost invariably, "Some of Disston's men; they or their employees own pretty much everything around here." Still further west the business portion of Tacony is rapidly developing, indicating a thriving population of several thousands.

It would require more space than you can spare to give an account of building associations, insurance and benefit societies, reading rooms, libraries, churches, &c., which have been and are still fostered by the firm, and which have been the means of enabling scores, if not hundreds, to secure homes of their own and to place their families in comparative comfort. Two instances may be cited which are in a measure personal to the writer. During a visit to England in the early eighties, a respectable young married man asked the question, "Could he not better himself in the United States?" After careful questioning he stated that 87½ cents per day was all he could possibly depend upon in England, although he was steady, sober and industrious. He said he had made a dollar per day, but at that rate he could never be sure of full time, so that practically 21 shillings per week was what he and his family had to live on. Not wishing to encourage a man with a wife and two small children and not more than a few dollars ahead to take the risk of throwing up even a bare living, he was advised to hold on rather than take risks in a strange land. But some four or five years later he came to Philadelphia, wife and children at the same time, and after various odd jobs he determined to try Disston's. He was taken on at laboring work and at laborer's pay, but, to use his own words,

"I soon saw that some men were quickly dropped, while others seemed to get better jobs than laboring, and I made up my mind that I would come in with the last mentioned. Doing the best I could, and doing it at all times, it was not long before I got into one of the shops as 'helper,' and not so very long before I had to have a helper myself." This man has four children now, but he lives in his own house. True, it is in the building association, but it stands him equal to only about \$9 per month, whereas to rent a house would be \$15 to \$16, and then not as good as the one he occupies, while by his own work at odd times he is constantly improving and embellishing it, and has already a margin of several hundred dollars in it. He sent for another brother, who passed through precisely the same experience, even to the building and occupying adjoining houses, so that men of this stamp are in love with Tacony, while at the same time the future of the place is pretty well assured with a class of residents such as these.

South of the railway, and extending along the entire river front, will be seen the immense establishment of Henry Disston & Sons, Incorporated. It would be impossible to give any adequate idea of this concern without a series of drawings and descriptive details entirely beyond the space at our disposal. The immense lumber yards and wood-working establishments, the plant for the manufacture of fuel gas, for steel melting and rolling, the engine rooms, blacksmith shops, machine shops, with the necessary yard space for wharfage, railway tracks, &c., occupy several acres, and yet this is only a beginning to the real work of the concern, viz., Saw making, &c. These shops, to a large extent, are on the second and third floors, which, with the packing and shipping rooms, cover several more acres of floor space, and are as clean and as neat and as orderly as human skill and experience can devise. To work in such a place with the majestic Delaware sweeping grandly past, and with its cool, fresh breezes available in every part of the building, must indeed be a boon, compared with the stifling air in a closely built up city, and Henry Disston well deserves the grateful remembrance of those for whom he planned so wisely and so well, and which now represents to the firm a cash investment of some \$5,000,000 or \$6,000,000.

After a few minutes' preliminary conversation with Samuel Disston and others of the firm, questions in regard to the condition of business and replies by Samuel Disston were as follows:

"What kind of business have you had recently, Mr. Disston?"

Answer.—"Just about fair, and all we could expect, taking the many drawbacks into consideration."

"How do you regard the future?"

Answer.—"Very favorably, indeed. We are not looking for much just now; the country roads have been so bad that in many cases goods sent weeks ago are only now being hauled from the depots."

"Are you working to full capacity?"

Answer.—"No, not at present; in fact, our capacity is so large, and is so continuously being increased by various additions and improvements, that we are generally a little ahead, and to keep up with the times we must always be on hand to move to something newer and better."

"Have you anything specially new at this time?"

Answer.—"Yes, we have; but for certain reasons we are not saying much about it yet. Indeed, we don't care to do much talking, anyway."

"Has the dullness led to your decreasing your working force?"

Answer.—"No, not to any extent; we have had to stock up more than usual, but

as we know the goods will be wanted before long, we don't mind that."

"How does your foreign trade hold out?"

Answer.—"That is always good. We are steadily increasing with the old countries, and constantly opening new accounts in new markets."

"Any very recently?"

Answer.—"Yes, we opened an account this week with a merchant in a city of 30,000 inhabitants on the West Coast of Africa, and he does nearly the entire trade of the colony, which is rapidly advancing in civilization, which is equivalent to more trade."

"About a year ago, Mr. Disston, you showed me an order for Saws for a firm in the northern portion of British India. In the letter they said your Saws cost more, but did better work than English Saws. Have you heard from them again?"

Answer.—"Yes, we are filling an order for them now."

"I suppose, then, you are glad to hear of the opening up of the waste places in Africa by European governments?"

Answer.—"Yes, glad to see progress anywhere, and by any country, and if there were no other reasons it is good for trade."

"I never heard you say much about Japan. That is a progressive country. Have you any trade there?"

Answer.—"We are not seeking trade there. The Japs are such wonderfully clever imitators that they duplicate almost anything that this or any other country can send them. We are after trade that we can keep and nurse into larger proportions, and we don't see that Japan is a field of that kind."

"How about the disturbances in South America? Do they not affect you somewhat?"

Answer.—"No, not very much. The goods are mostly sent by shiploads, bankers' credits being furnished in advance, so that American shippers are pretty well secured, as there are no small accounts scattered around."

Noticing other persons waiting their turn, the writer expressed thanks for the courteous reception and made for the train, the entire time, including trips both ways, being less than an hour and a half.

## Cycles.

SWEETING CYCLE COMPANY, 639 Arch street, also North Broad and Ontario streets, Philadelphia, Pa., issue the fourth edition of their 1891 catalogue. The company represent:

Warman & Hazlewood, Coventry, England.

Robinson & Price, Liverpool.

Humber & Co., Beeston, Coventry, Wolverhampton and London.

The Manchester Cycle Mfg. Company, Manchester.

The Stover Bicycle Mfg. Company, Freeport, Ill.

The Sunbeam Cycle Company, Wolverhampton.

The Minnehaha, London.

The Indiana Bicycle Mfg. Company, Indianapolis, Ind.

The Featherstone Pneumatics, Chicago, Ill.

The Hickory Bicycle (Sterling Elliott), Newton, Mass.

They thus refer to the new plan which they have adopted this season.

We this year introduce another new feature, and one that cannot fail to commend itself to the most critical. It has been the custom hitherto for each manufacturer or importer to represent one Wheel and try to have his customers take that and no other. We are changing this, and as importers, having the markets of the world from which to select, we have made a selection that cannot fail to please the most fastidious and exacting.

In addition to the machines enumerated, they are in a position to import any



Wheel made in England, to order. They refer to their line of American Wheels as complete, starting with a boy's Wheel at \$25 and running up to the finest product of American skill. In their advertisement, occupying a page in this issue, the company allude to the remarkable development of the Bicycle industry in this country, and make the point that there is no reason why Hardware merchants should not enjoy a share of it. The illustrations given in the advertisement and the information in regard to prices will be of interest to those contemplating handling this line of goods.

SIMMONS HARDWARE COMPANY, St. Louis, Mo., in their new Bicycle catalogue, just issued, give some general points of information on the subject of Bicycles and the advantages of cycling, which they state have not heretofore been presented to the trade in connection with Bicycle catalogues. Among these subjects the following are discussed:

- Advantages of cycling.
- Bicycling for women.
- Care of Bicycles.
- Points on repairing.
- Physical rules.
- Learning to ride.
- Good form in riding.
- The road question.
- Cyclers' rights and obligations on the road.

All these articles treat of practical questions which are of interest to cyclists, and will be found to contain much valuable information. In referring to the increased use of Bicycles, they remark:

It has been only a few years since we began handling Bicycles as a novelty and experiment; to-day these goods have become as staple and reasonable an item in our business as Baby Carriages, Skates, Sleds or Boys' Wagons. As the Hardware trade is handling these goods to an increased extent, and as Safety Bicycles work in readily and profitably with other regular lines, it will be well for merchants who are not now selling Bicycles to consider the feasibility of doing so.

ROUSE, DURYEA & Co. of Peoria, Ill., are manufacturing for the market this season the Sylph Bicycle. This is a spring frame Safety built on the latest and most improved design, and described as equal in material and workmanship to any manufactured. It embodies many new features, and is offered for sale only after rigid tests. The tires are of rubber and the three-part spring-truss frame with the cushion handles is adapted for absorbing all vibration, making a machine which can be used on rough paving or dirt roads. The spring-truss frame consists of front and rear parts, each carrying a wheel, and a third part carrying the load. These parts are hinged together at the crank axle and are held in position by spring braces. The springs are inclosed in cases which exclude all dirt. The saddle used is the well known Garford. The firm of Rouse, Duryea & Co. is controlled by and is partially the same as Rouse, Hazard & Co. of the same city.

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## An Interview with Henry Disston & Sons.

A BRIEF visit to and a brief interview with Samuel Disston at the works of Henry Disston & Sons at Tacony is reported by our Philadelphia correspondent as follows:

The traveler from New York, or *vice versa*, can hardly fail to be attracted by the smart and cosy appearance of a little suburb six miles from Broad street station. This suburb, although within the limits of Philadelphia, is known as Tacony, and practically commenced its career 12 or 14 years ago, when the late Henry Disston secured 600 acres of land with a frontage on the Delaware River of probably half a mile, and extending a mile or more back on gradually rising ground, through as beautiful a piece of country as can be found anywhere. The writer very distinctly remembers being invited to join a picnic which was given by the firm to their employees shortly after the purchase of this property in 1877, and surveying the same property 14 years later deepens the conviction that Henry Disston was a wonderfully far-sighted man, and that his successors have been fully equal to the responsibilities that devolved upon them. At the time mentioned Tacony was a pretty country place, probably not more than a dozen houses there all told, which fronted the majestic Delaware (at this point two to three miles wide), and made a most charming picture. To-day it is none the less pleasing to the eye, but what a difference. Approaching from the city the traveler will notice several acres of beautifully kept park, fronting the west side of the railway, artistically laid-out walks, flower beds, shrubs and shade trees, and fountains in every direction. West of the park and fronting it for several blocks are many really beautiful residences occupied mostly by the Disston employees. In point of fact, no matter what it is that attracts attention in Tacony, and inquiry is made as to who lives there or who built it, the answer is almost invariably, "Some of Disston's men; they or their employees own pretty much everything around here." Still further west the business portion of Tacony is rapidly developing, indicating a thriving population of several thousands.

It would require more space than you can spare to give an account of building associations, insurance and benefit societies, reading rooms, libraries, churches, &c., which have been and are still fostered by the firm, and which have been the means of enabling scores, if not hundreds, to secure homes of their own and to place their families in comparative comfort. Two instances may be cited which are in a measure personal to the writer. During a visit to England in the early eighties, a respectable young married man asked the question, "Could he not better himself in the United States?" After careful questioning he stated that 87½ cents per day was all he could possibly depend upon in England, although he was steady, sober and industrious. He said he had made a dollar per day, but at that rate he could never be sure of full time, so that practically 21 shillings per week was what he and his family had to live on. Not wishing to encourage a man with a wife and two small children and not more than a few dollars ahead to take the risk of throwing up even a bare living, he was advised to hold on rather than take risks in a strange land. But some four or five years later he came to Philadelphia, wife and children at the same time, and after various odd jobs he determined to try Disston's. He was taken on at laboring work and at laborer's pay, but, to use his own words,

"I soon saw that some men were quickly dropped, while others seemed to get better jobs than laboring, and I made up my mind that I would come in with the last mentioned. Doing the best I could, and doing it at all times, it was not long before I got into one of the shops as 'helper,' and not so very long before I had to have a helper myself." This man has four children now, but he lives in his own house. True, it is in the building association, but it stands him equal to only about \$9 per month, whereas to rent a house would be \$15 to \$16, and then not as good as the one he occupies, while by his own work at odd times he is constantly improving and embellishing it, and has already a margin of several hundred dollars in it. He sent for another brother, who passed through precisely the same experience, even to the building and occupying adjoining houses, so that men of this stamp are in love with Tacony, while at the same time the future of the place is pretty well assured with a class of residents such as these.

South of the railway, and extending along the entire river front, will be seen the immense establishment of Henry Disston & Sons, Incorporated. It would be impossible to give any adequate idea of this concern without a series of drawings and descriptive details entirely beyond the space at our disposal. The immense lumber yards and wood-working establishments, the plant for the manufacture of fuel gas, for steel melting and rolling, the engine rooms, blacksmith shops, machine shops, with the necessary yard space for wharfage, railway tracks, &c., occupy several acres, and yet this is only a beginning to the real work of the concern, viz., Saw making, &c. These shops, to a large extent, are on the second and third floors, which, with the packing and shipping rooms, cover several more acres of floor space, and are as clean and as neat and as orderly as human skill and experience can devise. To work in such a place with the majestic Delaware sweeping grandly past, and with its cool, fresh breezes available in every part of the building, must indeed be a boon, compared with the stifling air in a closely built up city, and Henry Disston well deserves the grateful remembrance of those for whom he planned so wisely and so well, and which now represents to the firm a cash investment of some \$5,000,000 or \$6,000,000.

After a few minutes' preliminary conversation with Samuel Disston and others of the firm, questions in regard to the condition of business and replies by Samuel Disston were as follows:

"What kind of business have you had recently, Mr. Disston?"

Answer.—"Just about fair, and all we could expect, taking the many drawbacks into consideration."

"How do you regard the future?"

Answer.—"Very favorably, indeed. We are not looking for much just now; the country roads have been so bad that in many cases goods sent weeks ago are only now being hauled from the depots."

"Are you working to full capacity?"

Answer.—"No, not at present; in fact, our capacity is so large, and is so continuously being increased by various additions and improvements, that we are generally a little ahead, and to keep up with the times we must always be on hand to move to something newer and better."

"Have you anything specially new at this time?"

Answer.—"Yes, we have; but for certain reasons we are not saying much about it yet. Indeed, we don't care to do much talking, anyway."

"Has the dullness led to your decreasing your working force?"

Answer.—"No, not to any extent; we have had to stock up more than usual, but

as we know the goods will be wanted before long, we don't mind that."

"How does your foreign trade hold out?"

Answer.—"That is always good. We are steadily increasing with the old countries, and constantly opening new accounts in new markets."

"Any very recently?"

Answer.—"Yes, we opened an account this week with a merchant in a city of 30,000 inhabitants on the West Coast of Africa, and he does nearly the entire trade of the colony, which is rapidly advancing in civilization, which is equivalent to more trade."

"About a year ago, Mr. Disston, you showed me an order for Saws for a firm in the northern portion of British India. In the letter they said your Saws cost more, but did better work than English Saws. Have you heard from them again?"

Answer.—"Yes, we are filling an order for them now."

"I suppose, then, you are glad to hear of the opening up of the waste places in Africa by European governments?"

Answer.—"Yes, glad to see progress anywhere, and by any country, and if there were no other reasons it is good for trade."

"I never heard you say much about Japan. That is a progressive country. Have you any trade there?"

Answer.—"We are not seeking trade there. The Japs are such wonderfully clever imitators that they duplicate almost anything that this or any other country can send them. We are after trade that we can keep and nurse into larger proportions, and we don't see that Japan is a field of that kind."

"How about the disturbances in South America? Do they not affect you somewhat?"

Answer.—"No, not very much. The goods are mostly sent by shiploads, bankers' credits being furnished in advance, so that American shippers are pretty well secured, as there are no small accounts scattered around."

Noticing other persons waiting their turn, the writer expressed thanks for the courteous reception and made for the train, the entire time, including trips both ways, being less than an hour and a half.

## Cycles.

SWEETING CYCLE COMPANY, 639 Arch street, also North Broad and Ontario streets, Philadelphia, Pa., issue the fourth edition of their 1891 catalogue. The company represent:

Warman & Hazlewood, Coventry, England.

Robinson & Price, Liverpool.

Humber & Co., Beeston, Coventry, Wolverhampton and London.

The Manchester Cycle Mfg. Company, Manchester.

The Stover Bicycle Mfg. Company, Freeport, Ill.

The Sunbeam Cycle Company, Wolverhampton.

The Minnehaha, London.

The Indiana Bicycle Mfg. Company, Indianapolis, Ind.

The Featherstone Pneumatics, Chicago, Ill.

The Hickory Bicycle (Sterling Elliott), Newton, Mass.

They thus refer to the new plan which they have adopted this season.

We this year introduce another new feature, and one that cannot fail to commend itself to the most critical. It has been the custom hitherto for each manufacturer or importer to represent one Wheel and try to have his customers take that and no other. We are changing this, and as importers, having the markets of the world from which to select, we have made a selection that cannot fail to please the most fastidious and exacting.

In addition to the machines enumerated, they are in a position to import any



Wheel made in England, to order. They refer to their line of American Wheels as complete, starting with a boy's Wheel at \$25 and running up to the finest product of American skill. In their advertisement, occupying a page in this issue, the company allude to the remarkable development of the Bicycle industry in this country, and make the point that there is no reason why Hardware merchants should not enjoy a share of it. The illustrations given in the advertisement and the information in regard to prices will be of interest to those contemplating handling this line of goods.

SIMMONS HARDWARE COMPANY, St. Louis, Mo., in their new Bicycle catalogue, just issued, give some general points of information on the subject of Bicycles and the advantages of cycling, which they state have not heretofore been presented to the trade in connection with Bicycle catalogues. Among these subjects the following are discussed:

- Advantages of cycling.
- Bicycling for women.
- Care of Bicycles.
- Points on repairing.
- Physical rules.
- Learning to ride.
- Good form in riding.
- The road question.
- Cyclers' rights and obligations on the road.

All these articles treat of practical questions which are of interest to cyclers, and will be found to contain much valuable information. In referring to the increased use of Bicycles, they remark:

It has been only a few years since we began handling Bicycles as a novelty and experiment; to-day these goods have become as staple and seasonable an item in our business as Baby Carriages, Skates, Sleds or Boys' Wagons. As the Hardware trade is handling these goods to an increased extent, and as Safety Bicycles work in readily and profitably with other regular lines, it will be well for merchants who are not now selling Bicycles to consider the feasibility of doing so.

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That I. H. Cheney intends to open a Hardware store in the Lyceum Block, Milford, Mass.

That Jerome Andrews, a well-known business man of Cattaraugus, N. Y., has bought a half interest in John A. Steven's Hardware store, Salamanca, N. Y. The firm are soon to move to larger quarters. Mr. Andrews has had an extended mercantile experience and has many friends and acquaintances in Salamanca.

That Crawford Bros. are erecting a new Hardware store at Auburndale, Ohio.

That Alderman & Flanner have succeeded the firm of Alderman, Flanner & Co., dealers in Hardware, Wilmington, N. C., the change being due to the death of Wm. Larkins.

That James W. Leitch is to open a Stove store in the Merrimac Hall building, North Andover, Mass.

That Wm. Bittel, who was for nearly 19 years in the employ of Samuel Seiler & Son of Peoria, Ill., has opened a store for himself at No. 219 So. Washington street, in that city.

## What Hardwaremen Say in Regard to Bicycles and Electrical Goods.

**WE PRESENT** below a number of extracts from letters recently received from Hardwaremen in which our correspondents touch upon the feasibility of carrying Electrical Goods and Bicycles in stock, in accordance with the recommendations of some of the trade whose letters have appeared in our recent issues. It will be observed that the writers refer to some of the advantages and disadvantages of incorporating these goods in the Hardware stock, some of them referring to their experience in the matter:

**MASSACHUSETTS.**—Have had no experience with either Bicycles or Electrical Goods. Our impression in relation to Bicycles is that it requires too much talk and time in making sales for the profit there is in them. The local field on Electrical Goods is well covered by a party making a specialty in that line.

**COLORADO.**—We have tried both and dropped them. The Bicycle business as done in Denver is almost entirely on installment, and we don't like that kind.

**WISCONSIN.**—Bicycles are evidently the coming addition to the poor Hardwareman's already long line of goods. Nearly every jobber handles full lines of both juniors and high-priced machines. One of our contemporaries has already put them in stock. We think they should be carried the same as Wheelbarrows. As to Electrical Goods: All towns of any size have telephone and electric light plants. One of the managers of these concerns generally puts in a small stock of common supplies, like Bells, Wire, Push Buttons, small Annunciators, &c. This will have a tendency to delay the handling of these goods by Hardwaremen; but it looks as if it were not very far distant. The Bicycle trade, we should think, will be unsatisfactory. It takes too long for customers to make up their mind, too much room is required, and goods soon get shop worn, as every purchaser insists on trying his machine before buying.

**CONNECTICUT.**—We have given both lines of goods some thought, but as yet we have not added them to our stock.

**DELAWARE.**—Because of our sandy roads the demand for Bicycles is exceedingly limited. We are outgrowing our conservatism, however, and perhaps the time is near when we can sell both Electrical Goods and Bicycles.

**INDIANA.**—We do not keep Bicycles and Electrical Goods, but think they are very proper lines for Hardwaremen to deal in.

**FLORIDA.**—Too much sand for Bicycle travel, and our people are not yet educated in electrical science. Although our town has electric lights, telephone, fire alarms, water works, &c., cannot see any private advantage to sell Electrical line.

**CONNECTICUT.**—Bicycles are not carried by us in stock. Nor do we see our way clear under the present agency system of making a profit if we did carry them, for the best makes of machines are already placed and rarely in a merchant's store.

**TENNESSEE.**—We have been carrying Bicycles and Electric Bells. In Bicycles the business last year was very satisfactory, in both point of profit and volume of business. We carried three lines and seemed to be able to fill all wants of the trade from these. Considering the volume of business the stock carried was small.

**MASSACHUSETTS.**—Bicycles and Electrical Goods are handled in this city by almost everybody except Hardware dealers. We do not handle either, a lack of floor room being the principal reason.

**OHIO.**—I think the American manufacturers of Safety Bicycles are bound to take front rank in producing the best Bicycles offered to the trade, and they will be handled quite largely by the retail Hardwaremen both in the city and country. This season I find by canvassing with some of our leading wheelmen (and we have some very clever ones) that the saddle is a very important matter to be considered in purchasing a Bicycle.

**INDIANA.**—Bicycles, we believe, would not be so desirable as Electrical Goods, as the line would have to be extensive and would take much time to sell.

**WEST VIRGINIA.**—As to Bicycles, encouraged by several inquiries last season I made an effort to place myself in position to take advantage of any orders that might come my way and the result of the investigation was that there was nothing in it for the Hardwareman. The line was too large and expensive to justify me in carrying any stock and when I tried to secure orders for them I found that my prospective customer had already heard from the manufacturer or nearest agent and had a price as low, and in some cases lower, than I could get. I believe that with few exceptions the manufacturers, "in order to introduce our machine in your territory," will quote the user as low as he will the dealer on one machine, and I know that agents almost invariably divide their commission with any one who will tender the cash with the order. The information contained in article upon Electrical Goods in recent issue of *The Iron Age* was very valuable and satisfactory and will no doubt induce many Hardwaremen, myself among the number, to make a modest investment in that line.

**ILLINOIS.**—Last year we started in with a small stock of Bicycles and are ready this year to close out and quit. Few sales, lots of complaint, breakages, &c., gave us all we wanted in one year. They are a plaything, anyway, and we predict very much lower prices as soon as the craze is over.

**CONNECTICUT.**—As to Bicycles, we are not authority on their sale, as we have never attempted to do anything with them, first, because we have not the room to spare to show them, and second, it has always been a question in our minds as to whether it was a profitable business for a Hardware dealer who does not, like ourselves, deal in sporting goods to attempt to handle them. In our mind they belong with sporting goods.

**TEXAS.**—I confess my profound ignorance of both Bicycles and Electrical Goods. Bicycles are handled here by the furniture men and Electrical Goods by nobody. We have telegraph, telephone, electric light and electric street railway companies here, hence Electrical Goods are very apt to be in sufficient demand soon to justify some one in carrying a stock. The one great drawback is that large corporations usually buy direct from the manufacturer, and only go to the local dealer when in a hurry.

**NEW YORK.**—As to whether Bicycles and Electrical Goods can be advantageously carried by Hardwaremen we would say that for Bicycles it depends upon the town, the condition of the roads and the established condition of trade. It cannot be otherwise than a dull trade in a small town, with poor roads for seven or eight months in the year, where there are three or four agencies for the leading Wheels and a total sale of one or two dozen Wheels, half of which must be exchanged or traded for old Wheels and the balance paid for largely in promises. Add to the above condition a large city like Rochester within reach, where an army of clerks and young men are employed. A dealer there will purchase 1000 Wheels, keeping nearly all the leading makes, selling them at popular prices on the partial payment plan, requiring one-fourth or one-third down, the balance within six months, divided into monthly payments, so secured on the wheel that in default of payment they as a rule recover the wheel. Such a trade seems satisfactory to them, but we notice it is not the Hardwaremen who handle the Wheels. Much might be said on this subject. We think the Hardware trade will gradually take hold of them, particularly in favored localities.

**INDIANA.**—Last year was our first season on Bicycles and we handled but one grade. We are encouraged by our success and will this season put in a larger stock and push sales all we can. There is an increasing demand for the best makes. We look for a nice business in this line.

**NEBRASKA.**—I tried handling a few Bicycles last year. I had to sell them so close there was little or no money made. The reason was simply this: Large firms sent their lists indiscriminately to clerks in banks, general stores or private individuals and quoted the regular discount. This feature of the case made it unremunerative. I have heard that they have concluded to discontinue this practice. If they do there will be an opportunity to handle them, and as they are a luxury there is no reason why they should not pay a reasonable profit and be handled by the Hardware trade generally. There is quite a demand for them and they are coming more and more into use.

**MICHIGAN.**—We have never carried Bicycles or Electrical Goods; but it is obvious that there is a growing demand in these lines, especially in the larger cities of our State, and even in the smaller ones these lines have been handled with good and profitable results in connection with Hardware.

**DISTRICT OF COLUMBIA.**—We don't handle either Bicycles or Electrical Goods, but would do so had we room. We believe that in most cities they can be handled with profit by the Hardware dealers.

**NEW YORK.**—We see no reason why Bicycles and Electrical Goods should not be sold and kept in stock by Hardwaremen if their trade will warrant it, but in a town of this size these goods are sold mostly by canvassing. But in all probability they will become staple articles of merchandise, and no doubt be placed in stock by many Hardwaremen.



**MISSISSIPPI.**—Not in general use in this section, but will be soon.

**IOWA.**—We have recently taken up the item of Bicycles, and we believe that this line of goods, including Tricycles and Velocipedes, can be successfully and profitably handled by the Hardware trade. Many towns are situated like ours where there is no regular store for sporting goods and such other goods as are usually handled by Gun houses, and the purchaser naturally turns to the Hardware store as the proper place to find these things. We have just put in a stock of Bicycles and Tricycles, and have already made some sales. We do not handle Electrical Goods, but believe it is only a question of time when they will become a part of a regular Hardware stock.

**ILLINOIS.**—Neither Bicycles nor Electrical Goods have been sold by the Hardware trade, being specialties that have to be worked up. Especially is this true of Wheels. If you have any success in selling them you must be a wheelman yourself, and be out with the boys. In this city about every third wheelman is an agent for some machine. That being true, it makes it hard for stores to sell that do not make Wheels a leading part of their business. Consequently they do not try to do anything with them.

**ILLINOIS.**—We have a nice trade in Bicycles, and find the demand increasing from year to year. We handle the full line and carry them in stock. Sold out clean last year. Are nice goods to handle in connection with Hardware, and profitable. We buy at 40 per cent. off and sell at 20 per cent., and sell a good many high-grade Wheels. We do nothing in Electrical Goods, as we have several parties here who do nothing else but furnish Electrical Supplies.

**NORTH CAROLINA.**—We have been handling Bicycles for the past 12 months, and have made some few sales. Our wheel is a new thing in this section, but we think we see a future for it. The profits are good, but with us each purchaser expects us to keep his machine adjusted, and that part of it is an intolerable nuisance. However, that will wear off as the people get more familiar with the machines. We think it a good line for the Hardwareman to take hold of.

**NEW JERSEY.**—Our experience is very limited. The little we have had leads us to think that if one of the firm or a popular salesman rides and talks bicycle sales may be made. At this distance from New York, however, purchasers are very apt to go there and examine all the leading makes, and they often succeed in obtaining discounts about as low as a country dealer can obtain. There were six safeties bought in this town last season. We sold three of them. The other three were bought by the consumer about as low as we could buy them.

**ILLINOIS.**—As to Bicycles, my experience has not been what I could have wished for, because the manufacturers establish as agents nearly every young man who wants a wheel. The sequel is this: When a fellow decides to get himself a wheel he decides on one that suits him, and he writes the manufacturer that if that wheel is not represented here by an agent that he wants the agency, and thus gets the agent's discounts, where in reality he only wants the agency to secure the one wheel at the discount that should only be allowed to legitimate dealers. There are three Hardware stores here, and I will guarantee that there are at least seven or eight young men who are agents for different machines, and none of them ever bought two of the same make of machine.

## George Wostenholm & Son's Agency.

**ASLINE WARD**, 29 Chambers street, New York, who has been for more than 45 years the representative of George Wostenholm & Son, withdrew from business May 1, and will be succeeded by Edward Beckett at the same address. In this withdrawal from active business Mr. Ward, who has for long been connected with the Hardware trade in this city, will have the best wishes of his many friends in all parts of the country, by whom he is held in high esteem. He retains a large interest in the company, in which also he continues a director. Mr. Beckett, who succeeds him, is regarded as exceptionally well qualified for the position which he assumes, having been associated with Mr. Ward for the past two years and having previously been actively identified with the Sheffield house, thus having a thorough familiarity with the business. In this connection it may be proper to state that a very satisfactory demand is reported for this well-known line of goods, but that on account of a strike at the factory there is at present some delay in filling orders as promptly as might be desired.

## Handbook for Salesmen.

**WE GIVE** below the conclusion of the admirable Manual for Salesmen in a Hardware Store, by C. S. Andrews, Danbury, Conn., the commencement of which was given in our last issue

Show goods freely to all customers; be as serviceable as you can to all, whether buyers or not. It is impertinent to insist on showing goods not wanted; it is delicately polite to get at exactly what is wanted on the slightest hint. At the outset you have to guess what grade of goods your customer wants, high-price, low-price or medium. Guess low, but be quick to discover your error, and right yourself instantly, making no comment. The worst blunder you can make is to indicate in a supercilious manner that we keep better goods than your customer asks for. In your first minute with a customer you give him not only an impression of yourself, but of the store, which is likely to determine not whether he buys of you, but whether he becomes a customer of the house or a talker against it.

Cultivate the habit of working fast. It is largely a matter of habit. Do thoroughly what you undertake, and do not try to do more than you can do thoroughly. Serve customers strictly in turn. If you can serve more than one at once, very well; but do not let the first wait for the second.

Do not take a customer away from another clerk until he is through with him. And do not turn a customer over to another clerk if possible to avoid it, except for the dinner hour.

Do not send a customer up-stairs or down-stairs by himself. Either go with him or turn him over to some clerk who will.

Do not turn a customer over to the boys or to new men who are learning the business, while you are busy arranging or putting away goods.

Make no promises that you have any doubt about the fulfillment of; but having made a promise, do more than your share toward the fulfillment of it, and see that the next one after you does his share if you can.

In selling goods, you are fully authorized in every case to guarantee to your customer perfect satisfaction with his purchase.

You may allow your customer at any time and for any reason to return his purchase, and pay back full purchase money, provided the goods are uninjured or are in as good condition as when sold.

If your customer has made use of his purchase and makes complaint that the quality or value has not proven equal to his expectations, you may return all or so much of the purchase money as shall make him perfectly satisfied that he has received full value for his money.

Never question, or appear to question, the honesty or sincerity of a customer who is making complaint of a grievance of any kind or nature. Your judgment that the customer is untruthful may be right and it may be wrong. It is much better to suffer occasional loss unjustly than it is to even appear to question the honesty of an old or would be customer. Assume that your customer's story is true, and frankly make full inquiry in regard to the matter in order that we may correct the fault if it lies with the goods or the store. Perhaps when all the facts are known to you it will be easy to show to your customer that he is in error. Don't press him, against his will, to accept your position even when you know you are right; but state the case quietly, as it seems to you, and be sure that you do not leave him until he is perfectly satisfied that he is being honestly and generously dealt with.

You should watch carefully for any indication of dissatisfaction on the part of a customer, and make careful inquiry as to its cause, if any, and then do your best to remove all grounds of complaint against the store or the goods.

All customers' grievances should be, if possible, adjusted by the clerk of whom the purchase was made; only refer such matters to headquarters when you feel that you cannot persuade your customer to be satisfied with the adjustment you are willing to take the responsibility of making.

Always report to headquarters after adjustment, if not before, all complaints of customers, and explain the manner of their adjustment.

Attend strictly to business while on duty; be invariably polite and obliging to every one, not only for the benefit of the store, but for your own good. Remember that civility, while it may be one of the scarcest articles in the market, is also one of the cheapest, and the net profit on it to you in the end will be greater, not only from a social and moral front of view, but in dollars and cents, than anything else you may have to offer a customer. The

more self-forgetting you are, and the more acceptable you are to whomsoever your customer may be, the better you are as a clerk.

## Exports.

PER BARK SERRANO, APRIL 25, 1891, FOR EAST LONDON, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—15,600 pounds Flow Parts.

By Arkell & Douglas.—4 dozen Cordage, 15 cases Sash Weights, 40,000 pounds Barb Wire, 1 dozen Barrows, 6 Mangles, 10 dozen Jack Screws, 50 dozen Rakes and Hoes, 19 dozen Saws, 18 dozen Wrenches, 2 packages Hose, 10 Washing Machines, 6 dozen Hammers, 3 cases Nails and Tacks, 1525 cases Flows and parts, 6 dozen Churns, 55 Shellers, 295 dozen Axes and Hatchets, 150 kegs Nails, 20 Scales, 173 dozen Builders' Hardware, 6 cases Carriage Hardware, 60 dozen Hardware, 4 dozen Sad Irons, 10 dozen Razors and Strops, 1000 Plovs, 1 dozen Saw Sets, 39 dozen Carriage Hardware, 17 racks Churns, 5 cases Axes, 1 dozen Buckets.

PER BRIG DARPA, APRIL 27, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By W. E. Peck.—8 packages Lampware.

By Winchester Repeating Arms Company.—30,000 Cartridges, 24 sets Tools, 6 Guns.

By R. W. Forbes & Son.—12 Plovs, 4 dozen Forks, 9 packages Hardware, 4 Corn Shell-

ers.

By J. Norton's Son.—1 Pump.

By A. Field & Co.—2 cases Cabinet Hardware, 1 dozen Well Wheels, 1 dozen Hardware, 93 pounds Air Guns, 25 dozen Scales and Hardware, 39 dozen Hardware, 1500 pounds Nails, 2 dozen Rakes, 2 dozen Sad Irons, 1 dozen Blocks, 8 Planes, 10,000 Cartridges, 9 Fire Arms, 1000 Cartridges.

By Combs, Crosby & Eddy.—1 dozen Ladders, 1 dozen Levels, 1 Harrow, 9 Churns, 4 dozen Axes, 1 Corn Sheller.

By W. H. Crossman & Bro.—39 cases Carpenters' Hardware, 114 packages Agricultural Implements, 10 crates Washing Machines, 68 bundles Barrows, 2 casks Pumps, 2 Mangles, 9 feet Rubber Hose, 12 Springs, 8 cases Sash Weights, 1 bale Sash Cord, 30 cases Hardware, 10 sets Axes, 1 case Agricultural Implements, 1 dozen Scales, 7 bundles Ladders, 1 case Pumps, 28 packages and 5 cases Hardware, 1 case Rakes, 750 feet Rubber Hose, 4 cases Pumps, 2 Stoves, 2 Hand Carts, 13 packages Hardware, 12 cases Hardware, 30,000 pounds Barb Wire, 10 crates Stove Polish, 3 cases Pumps, 1 case Axes.

PER BARK ARGYLE, APRIL 28, 1891, FOR MELBOURNE, AUSTRALIA.

By Plumb, Burdick & Barnard.—31 cases Iron Bolts.

By Rogers, Smith & Co.—12 barrels Plated Ware.

By Simpson, Hall, Miller & Co.—3 casks Plated Ware.

By Sargent & Co.—20 packages Hardware.

By W. James.—62 cases Lawn Mowers.

By Russell & Erwin Mfg. Company.—50 cases and 3 packages Hardware.

By Edward Miller & Co.—28 packages Lampware.

By H. Disston & Sons.—9 cases Hardware.

By Dunbar, Hobart & Co.—68 cases Nails.

By W. K. Freeman.—3 cases Lawn Mowers, 4 cases Hardware.

By Winchester Repeating Arms Company.—130,000 Primers, 35,000 Cartridges.

By Meriden Britannia Company.—15 packages and 1 box Plated Ware.

By Healy & Earl.—500 Lamps.

By Weaver & Sterry.—1000 pounds Nails.

By R. H. Dana & Co.—50 dozen Axes, 15 reams Flint Paper.

By H. W. Peabody & Co.—8 packages Grindstones, 52,000 Cartridges, 10,000 Empty Shells, 10,000 Primers, 200 Shells.

By R. W. Forbes & Son.—4 dozen Wrenches, 10 dozen Snaths, 2 cases Carriage Hardware, 10 dozen Screw Drivers, 6 dozen Hammers.

By W. H. Crossman & Bro.—3½ dozen Meat Choppers, 140 pounds Stone, 2600 pounds Nails, 1 case Hardware, ½ dozen Banks, 4 cases Hardware, 1½ dozen Vises, 6 Mangles, 4 gross Latches, 2 casks Lamp Goods, 3 dozen Toy Banks, 50 cases Hardware, 10 tons Barb Wire, 3 packages Hardware, 10 tons Barb Wire, 7000 Loaded Shells, 2000 Cartridges, 20,000 Primers.

By McLean Bros. & Rigg.—2 dozen Latches, 2 dozen Snaths, ½ dozen Axes, 39 dozen Drills, 4 dozen Lawn Mowers, 2 dozen Chain Wrenches, 1 dozen Wrenches, 1½ dozen Chucks, 12 dozen Lanterns, &c., 10 Plovs, 12 dozen Lamps, 1 dozen Rifles, 12,000 Cartridges, ½ dozen Wringers, 37 dozen Emery Wheels.

By Australasian-American Shipping Company.—10 cases Axes, 11 Reapers, 641 pounds Flint Paper, 40 packages Stoves, 76 dozen Forks, &c., 30 dozen Hammers, 26 cases Mowers, 300 pounds Hardware, 4 cases Axes, 1 case Hardware, 11 crates Stones, 1 case Hardware.

By Arkell & Douglas.—13 Forges, 198 dozen Axes, 24 Lawn Mowers, 5 dozen Wringers, 6 dozen Scythes, 3 dozen Pumps, 10 dozen Hammers, 157 pieces Hardware, 11 cases Bolts, 2 cases Menders, 7 dozen Axes, 3 dozen Bench Screws, 1 dozen Wringers, 24 dozen Axes, 30 dozen Locks, 16 dozen Axes, 13 Pumps, 212 pounds Bolts, 200 reels Barb Wire, 12 dozen Rakes, 36 dozen Picture Wire, 120 dozen Lampware, 100 dozen Forks, 20 dozen Snaths, 10 dozen Forks, 10 dozen Rakes, 14 dozen Pumps, 5 dozen Hammers, 9 dozen Traps, 60 dozen Tacks, ½ dozen Wringers, 102 dozen Tinware, 1000 pounds Iron Nails, 200 dozen Files, 37 dozen Lampware, 60,000 Cartridges, 1 dozen Tools, 13 dozen Guns, 70,000 Primers, 120 dozen Tacks, 620 pounds Hinges, ½ dozen Carpet Sweepers, 1 dozen Bush Hooks, 6 dozen Shot Cases, 1 dozen Miter Boxes, 19 Stoves, 24 dozen Reflectors, 12 dozen Axes, 1 dozen Vises, 13 dozen Wire, 27 dozen Lampware, 36 dozen Lampware, 21 dozen Wrenches, 10 dozen Hammers, 15 dozen Meat Choppers, 2½ dozen Wringers, 9 dozen Dust Pans, 9 sets Springs, 14 dozen Traps, 1 dozen Money Tills, 35 dozen Axes, 2 gross Glue, 1 Oil Stove, 94 dozen Rakes and Forks.

## Paints and Colors.

The reports as to trade in Paints, Colors and kindred goods are uniformly favorable. There is no complaint to speak of in any department as far as the movement is concerned and the pendulations of values are unimportant. The distribution by jobbers proceeds very smoothly, the drafts upon supplies at first hands are quite as full as usual at this season of the year and competition is temperate in nearly all departments. The outlook is considered favorable for as satisfactory results during the balance of the spring and in the early summer season and is free from conditions that would impair confidence in continued steadiness to prices.

**White Lead.**—This pigment has met with fairly liberal sale and the condition of the market at the present time is practically the same as it was a month ago. Corroders adhere to their list and concern themselves but little over the concessions frequently made by jobbers. Manufacturers of mixed Leads seem also to maintain prices, although, with the market for their product an open one, the uniformity that corroders find practicable does not exist. However, the general market may fairly be said to preserve very good form, and there is nothing in the present surroundings that points to any material change in the immediate future.

**Red Lead and Litharge.**—About the usual quantities are being taken by large consumers and the jobbing movement is fair. Outside of the combine corroders there is no offering to speak of and prices remain very steady.

**Zincs.**—The movement of both domestic and foreign Oxide continues satisfactory to sellers. Fully the average quantity is taken up by manufacturers of mixed Leads and other Paints in which the commodity is extensively employed, and the distribution in a jobbing way appears to be of good volume. The outward movement, in fact, is still large enough to closely absorb the supply, and, with no rupture of friendly relations between manufacturers and importers, the market preserves a firm, healthy tone.

**Colors.**—There is no change in the condition of the market for Dry or Oil Colors. The varieties chiefly used by house painters are selling quite freely, and the movement in grinders' specialties is also fully up to the average. Some little variation in prices is noted here and there, but the

fluctuation is unimportant, rarely going beyond commonplace bounds. As a general thing there is some fault with quality in cases where concessions appear to be liberal.

The movement in Vermilion has been noticeably good, including several round lots of first-class brands of English at prices on the basis of 64¢ for bulk; inferior brands at 2¢ less and American at 12½¢ @ 13¢. The sales of foreign and domestic Venetian Red are also on a liberal scale, and at stiff prices. There is still some irregularity in Paris Green prices, a concession of ½¢ being made by sellers not identified with the manufacturers' agreement.

**Miscellaneous.**—No change has taken place in the market for Chalk. Large buyers have ample supplies on hand and under engagement, and the offering from the foreign market is moderate. Common quality Whiting is freely offered at 40¢ @ 45¢, and meets with liberal sale, but Gilders' is relatively firmer at 50¢ @ 55¢ for ordinary and 60¢ @ 65¢ for extra. The market for Barytes, Terra Alba, China Clay and Talc is unchanged. Prime quality Putty sells here at 1½¢ in tubs, 2¢ @ 2½¢ in cans and 2¢ @ 2½¢ in bladders, but inferior kinds are secured at less.

## Oils and Turpentine.

Changes in this line have been few and unimportant. Under the weight of speculative pressure prices for Lard have weakened slightly, and that movement in turn has had some bearing upon inferior Greases and Lard Oil. Otherwise no circumstance has arisen that tended to impair confidence in the slightest degree, nor has anything transpired calculated to stimulate action. Business has therefore proceeded in about the usual way, while values are steady to firm nearly all through the list.

**Linseed Oil.**—Friendly relations between city and out of town crushers are maintained and there is a good, steady demand for Oil. Apart from this there is nothing to say except that prices stand precisely as they have been quoted for several weeks, with the market firm, and more probability of an advance than any movement in the opposite direction.

**Cotton Seed Oil.**—There is a very firm market for all grades. The scarcity of prime quality and consequent high cost of the same keeps the attention of buyers centered upon "off" grades, in which transactions for home and export account have taken place at stiff prices. Considerable Oil is moving direct from the mills into the factories of large consumers, and the greater portion of the stock that comes this way is disposed of upon arrival, thus keeping the position strong.

**Lard Oil.** Lower prices for raw material have prompted some modification of pressers' figures for Oil, and the market is looking slightly weaker at the moment. The demand has fallen off somewhat, but sales are still very fair.

**Fish Oils.**—The position of crude Oils is wholly unchanged, and in the absence of movement there former prices are quoted for the manufactured products. Business is of fair volume, but chiefly of a jobbing character.

**Miscellaneous.**—Prices for Olive, Coconut, Palm and Red Oils stand practically the same as they were last week. Business in the several lines is moderate.

**Spirits Turpentine.**—Although supplies in first hands here have not increased, the offering has been free enough to weaken prices somewhat, and sales have been made at 39 cents for both regular and machine barrels.



**Jones' Combination Lawn Sprinkler.**

M. D. Jones & Co., 76 Washington street, Boston, are introducing a lawn sprinkler, as illustrated herewith. The



Fig. 1.—Jones' Combination Lawn Sprinkler.

sprinkler is 28 inches high, and the diameter of revolving jet  $4\frac{1}{2}$  inches. It is stated that the sprinkler can be used as a revolving sprinkler, or not to revolve, as de-

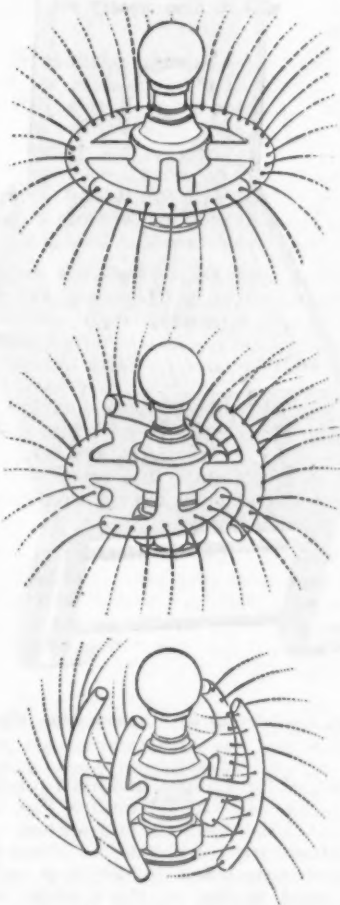


Fig. 2.—Position of Arms.

sired; as by simply turning the arms into different positions the desired effect is given. Fig. 3 represents some of the

positions in which the arms may be placed. The position shown in the upper cut results in a spray that does not revolve; the distance of spreading the water is governed by the pressure. It is claimed that it will play from every point of its circumference the same distance as any spray-hose nozzle under corresponding pressure. In the second position it is stated that it will revolve and throw the water equal in distance to a four-arm lawn sprinkler and distribute the water evenly. In the third

played for drawing wire from the coil and cutting to any desired length, or it can be used as a wire cutter only. The machine shown in the engraving is intended for cutting wire  $\frac{1}{4}$  inch or less in diameter, but other sizes are made to order. The manufacturers mention that it can be used in connection with wire straighteners of their own or other makes. The Peck, Stow & Wilcox Company also make a combined wire straightener, feed and cutter, which consists of these two machines in

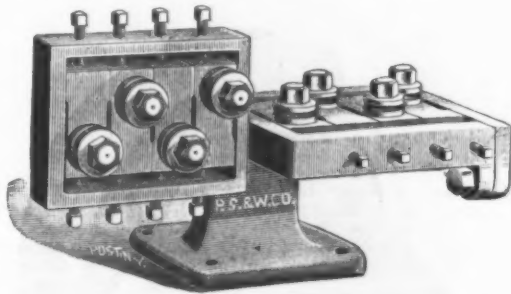


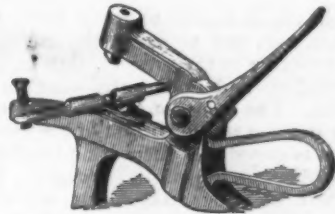
Fig. 1.—Wire Straightener.

position the sprinkler revolves at its greatest speed, and makes a very pretty effect of water display. The sprinkler can also be used with a spray jet on the top instead of the solid ball top, or with ball and basket jet. The point is made that a great variety of combinations of water display can be made with this sprinkler. It is referred to as strong, durable in every respect, the arms being of finished castings, not tubing, and as convenient for irrigating purposes.

combination. When thus combined it is pointed out that the wire is drawn through the straightener by means of the feed and can be cut to any desired length by means of the cutter attached.

**Automatic Saw Set.**

C. E. Neale, Worcester, Mass., is introducing an automatic saw set, as illustrated



Automatic Saw Set.

herewith. The set is operated by an elliptic spring and a lever. It is claimed that the set gives a uniform set to every tooth,

**Wire Straightener, Feed and Cutter.**

Fig. 1 of the accompanying illustrations shows a roll wire straightener with central standard that has been put on the market by the Peck, Stow & Wilcox Company, 27 Chambers street, New York. This straightener can, however, be furnished with either a horizontal or a vertical stem if desired. When the straightener is used alone the wire is pulled through by hand, and the manufacturers do not recommend

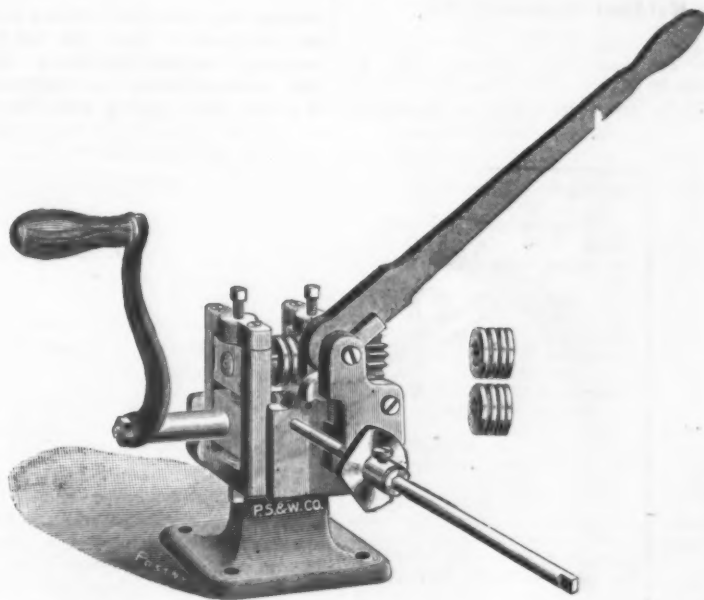


Fig. 2.—Little Gem Wire Feed and Cutter.

it for wire larger than  $\frac{1}{2}$  inch in diameter. Fig. 2 is the Little Gem Wire Feed and Cutter, likewise recently introduced by the Peck, Stow & Wilcox Company. This machine can be used for several purposes. When fastened to the bench it can be em-

ployed for drawing wire from the coil and cutting to any desired length, or it can be used as a wire cutter only. The machine shown in the engraving is intended for cutting wire  $\frac{1}{4}$  inch or less in diameter, but other sizes are made to order. The manufacturers mention that it can be used in connection with wire straighteners of their own or other makes. The Peck, Stow & Wilcox Company also make a combined wire straightener, feed and cutter, which consists of these two machines in

**Special Showcase Pulley.**

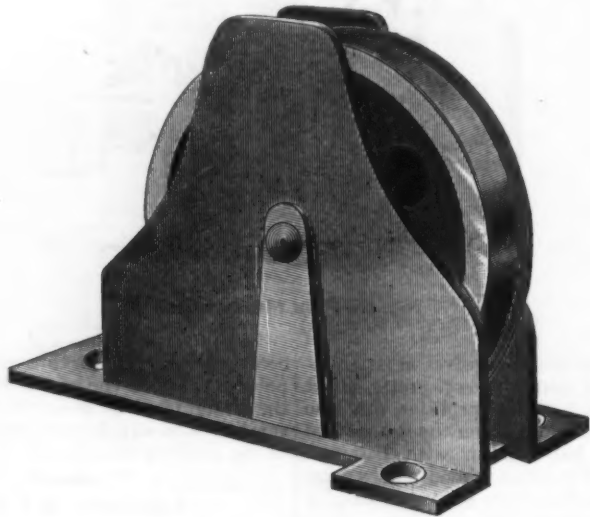
Gardner Sash Balance Company, 311 First National Bank Building, Chicago, Ill., are introducing a showcase pulley with a steel ribbon, as illustrated herewith. The pulley is made from cast iron, with turned axles, turned wheels and steel pins. They are referred to as light and well finished, yet strong and durable. Great care has been exercised in having them run true, by leaving shoulders at the axles,

strength; the closeness to tree or post that the hammock can be fastened, and that the Tie works equally well with either wet or dry rope.

**Combination Belt Hooks.**

W. O. Talcott, Providence, R. I., is offering belt hooks to the trade, as illustrated herewith. These hooks, Fig. 1, are made from a tough quality of malleable iron, with the upper or single row of teeth

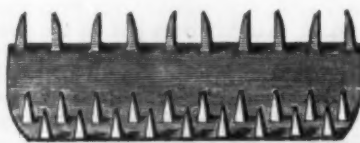
these fasteners will run over 2-inch pulleys 3500 turns per minute. They are described as smooth to the bands, and as making a joint equal to a cement lap on the surface next the pulley. The fasteners are referred



*Gardner Special Showcase Pulley.*

which are designed to keep them in a correct line, and to cause the ribbon to run smoothly in the grooves, thus making it noiseless, and saving the wear on the ribbon. The flange of the pulley is carefully beveled to the bottom of the groove, and it is stated that there is no friction on the ribbon to impair its strength. It is claimed that the attachments are easily applied, and so constructed that the strength of the ribbon is not impaired at any point. The specialty consists of applying steel-ribbon pulleys to sliding doors in showcases.

unequally beveled at the point like a horse-shoe nail. It is stated that this form causes the teeth to clinch automatically as they pass into the belting, as shown in Fig. 2. The double or lower row of teeth

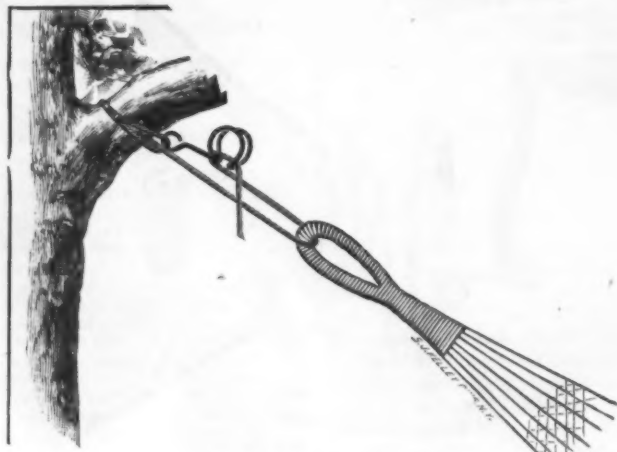


*Fig. 1.—Combination Belt Hook.*

are not long enough to clinch or rivet, but are designed to hold in the belting by wedging it against the teeth. In case the belt becomes slack, it is claimed that a pair of plyers will readily pull the belt away

**Holdfast Hammock Tie.**

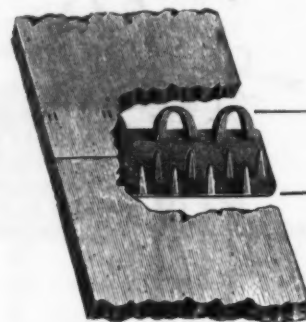
The Tie Company, Sidney, N. Y., Harmon & Dixon, 118 Chambers street, New York, are introducing a Hammock



*Holdfast Hammock Tie.*

Tie, as illustrated herewith. It is mounted with  $\frac{1}{4}$ -inch rope for hanging hammocks. The advantages claimed for this Tie are the quickness with which a hammock can be put up and taken down; the use with it of a double rope, thereby giving double

from the double row of points without changing their shape, and that after being shortened the belt can be replaced on the same fastener. Instances are cited where belts have shortened five or six times, using the same fastener. It is also claimed that



*Fig. 2.—Manner of Applying the Combination Belt Hook.*

to as taking the place of lacing in machine shops, and as giving satisfaction, as is indicated by testimonials received from those using them.

**Western Star Washer.**

The Anthony Wayne Mfg. Company, Fort Wayne, Ind., are putting on the market a washing machine, as illustrated in Fig. 1. It is referred to as similar in construction to other square washers now on the market, but having their improved patent gearing, including the round post, a feature of the Anthony Washer. It is



*Fig. 1.—Interior of Western Star Washer.*

arranged for wringer, and has a tub bench in connection with the washer, Fig. 2. It is stated that the sides and bottom of the machine are corrugated, no cleats being nailed to the sides; in fact, that no nails are used inside of the machine, where they would be apt to come in contact with the clothing, and that the corrugation on the sides is recessed into the bottom and a cleat on top, so that the clothes shall sustain no injury whatever from nails that may get loose and pull out. The point is



made that all nuts, washers, nails, &c., used in the construction are galvanized, and everything done to make this machine

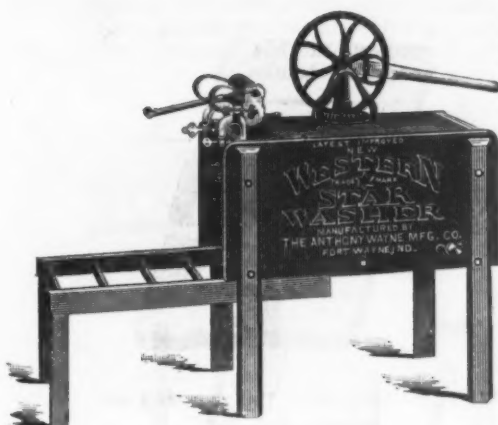
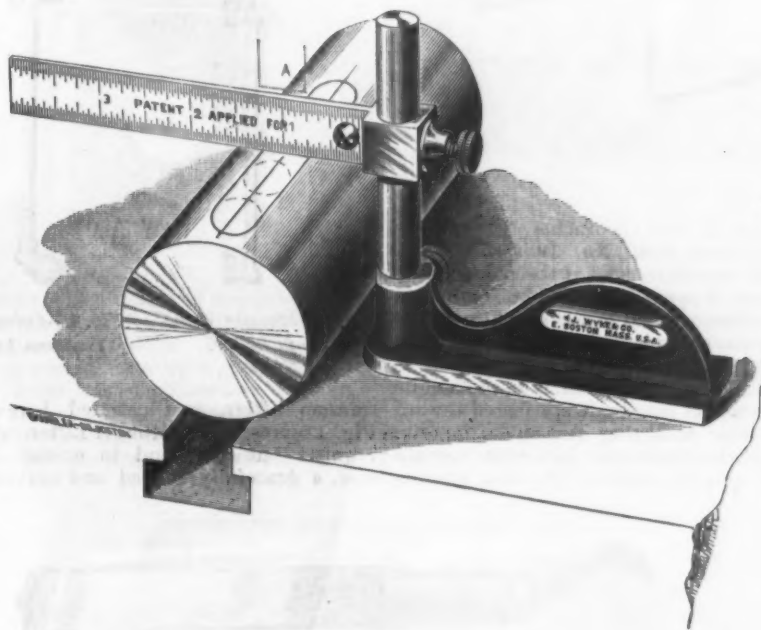


Fig. 2.—Exterior of Western Star Washer.

as perfect in every respect as it can possibly be made.

#### Wyke's Keyseat or Splining Gauge.

J. Wyke & Co., East Boston, Mass., are introducing a tool for the use of engineers and machinists in general, as illustrated herewith. It is designed for setting shafting on the planing, shaping, milling or drilling machine, when about to have slots, splines, or keyseats cut into them; also for setting the tools, whether for planing or milling out the slots. The cut gives an excellent idea of the operation of the tool. The manufacturers claim that the tool



Wyke's Keyseat or Splining Gauge.

enables the artisan to work rapidly, correctly and mechanically, and that it is so simple any one can understand it.

#### Union Cash Register.

Union Cash Register Company, Trenton, N. J., are placing on the market a cash register, as illustrated herewith. It is arranged to show the different sales on wheels, indicated in regular dollar and cent columns, which can be read at a glance. The manufacturers claim that the register will show the amount of cash or credit sales, as well as amount paid out

of the drawer; that it keeps a sum total of all transactions made during the day, week or month; that it is handsome in finish and of durable mechanical construction. The price at which this register is sold is referred to as an inducement to purchasers. It is stated that each reg-

sufficient to take up slack as the rope is drawn taut. The grip is designed for securing ropes, cords, &c., without tying or wrapping, and it is stated that while holding the rope fast, it does not cut or chafe it, nor chuck so as to make release difficult. The size shown in the



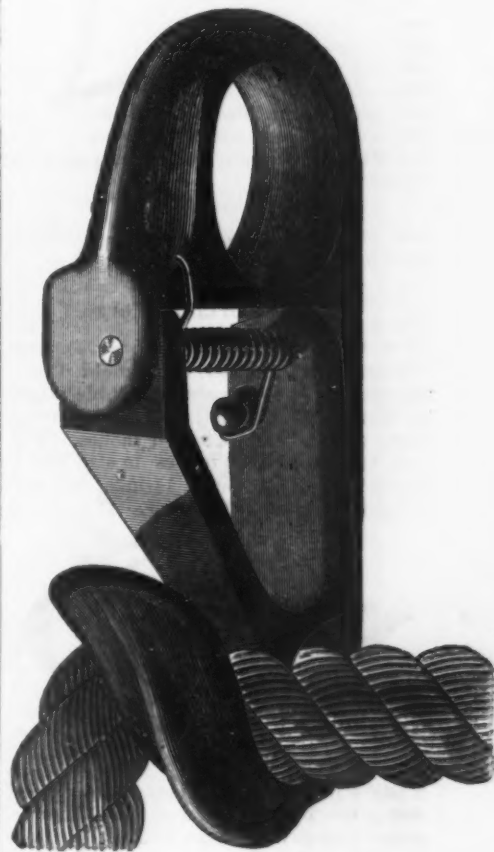
Union Cash Register.

ister is guaranteed for two years, the guarantee being attached to every register.

#### McClure's Rope Holder or Grip.

A. E. McClure & Co., 318 Bissell Block, Pittsburgh, Pa., are introducing a rope

cut has a capacity for  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{5}{8}$  inch rope. They are made, however, for holding all sizes from a cord to a cable, the largest size made at present weighing 22 pounds, with a capacity of from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches diameter of rope. This size has two eyes so laced on the dog or actuating



McClure's Rope Holder or Grip.

holder or grip as illustrated herewith. It consists of a hook-like frame with a lateral eye for securing it in the desired place, either at the end of a rope or with an S hook. The inside or throat of the hook is beveled, and an actuating plate is pivoted at one end, being actuated by a spring, while the other end of the plate has a diagonally beveled serrated engaging face, shaped to fit the strands of rope. It is strongly made of galvanized malleable iron, fitted with brass pivot and spring. It is claimed that there is no strain on the spring when the grip is not in use, other than the mere holding of the plate to place; and when in use only

plate as to allow the rope to be released when under a heavy strain, by thrusting a steel bar through the eyes, using it as a lever. The point is made that all the grips are provided with a bar eye or hold of some kind, to be used or not as desired.

These grips are recommended for use on railroad wrecking cars; for securing loads on wagons without knotting or tying the rope; for farmers, teamsters, swinging staging; clothes lines, hammocks, awnings and tents; curtain cords, mosquito

### Giant Grip Fastening.

Harriman Hoe and Tool Company, Harriman, Tenn., are using the Giant Grip Fastener, as illustrated in Fig. 1. This consists of a V-shaped staple  $1\frac{1}{2}$

charge is made for it; that there is no danger of its failure to operate, as in the case of a nail or rivet being used for the same purpose, and that the shank can be tightened when loose by driving the shank further into the handle, when the fastener re-engages itself in the surrounding wood. Fig. 2 represents the hoe complete, with the fastener in the handle.

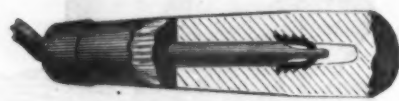


*Cyclone Portable Forge.*

bars, sail boats, rigging, and all kinds of hoisting.

### Cyclone Portable Forge.

Foos Mfg. Company, Springfield, Ohio, are offering to the trade a portable forge, as illustrated herewith. It is 30 inches high, with a hearth 28 x 40 inches. The coal box is 22 x 8 $\frac{1}{2}$  inches in size and 6 inches deep. It has a 14-inch fan and weighs complete 295 pounds. It is stated



*Fig. 1.—Giant Grip Fastening.*

it has a powerful blast, and is capable of doing the heaviest kind of work, the fire-place being very large and deep. The hood is referred to as very stiff, being made of No. 20 iron and braced on the inside with two pieces of  $\frac{3}{4}$  x  $\frac{1}{2}$  bar iron. It is provided with patent drop doors and revolving ball tuyere. Attention is directed to the double ratchet movement for operating the fan, the adjustable legs, detachable lever and movable frame, all of which are alluded to as desirable features.

inches long and  $1\frac{1}{2}$  inches between the points, made from No. 10 spring wire, barbed, and sharpened at the points. The staple is slipped through a hole punched in the flattened end of the shank, with the points toward the blade, before the hoe is put upon the handle. It is stated that as the shank is being driven into the handle the points of the staple are forced toward each other until they rest upon opposite sides of the shank, and that when a strain is put upon the blade of the hoe, tending



*Fig. 2.—The Hoe with Giant Grip Fastening.*

to pull it out of the handle the points divide, the barbs imbed themselves in the surrounding wood and prevent the hoe from coming out. The advantages claimed for the fastening are that it can be applied at such a trifling cost no extra

thumb piece being provided for this purpose, Fig. 2. The manufacturers claim this lifter to be strictly burglar proof, resulting from the use of the locking set screw, shown more fully in sectional view of the thumb piece in Fig. 3. This lock-

### Transom Lifters.

Munger-Colton Mfg. Company, Chicago, Ill., H. H. & C. L. Munger, 142 Lake street, Chicago, agents, are introducing



*Fig. 1.—Munger Transom Lifter.*

*Fig. 4.—Columbia Transom Lifter*

transom lifters, as illustrated herewith. Fig. 1 represents the Munger Lifter, which requires but one hand to operate with ease, a gracefully shaped and convenient



ing set screw can be used or not at pleasure, but when used, it is stated that no manipulation from the outside can possibly release the lifter, thus giving positive security. The action of the locking set screw can be seen in Fig. 3, and it is remarked that the shape of

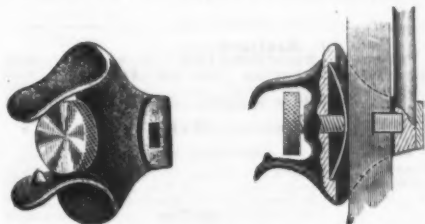


Fig. 2.—Thumb Piece for Munger Transom Lifter.

Fig. 3.—Section View of Thumb Piece for Munger Transom Lifter.

the thumb piece prevents the removal of the set screw. Attention is directed to the fact that this lifter is worked wholly with one hand, and that it is applicable for transoms hinged at either top, bottom

### The Best Lawn Mower.

Dille & Anderson, Richmond, Ind., are introducing a lawn mower, as illustrated herewith. The drive wheels are 8 inches in diameter, and warranted by the manufacturers to cut grass 6 and 8 inches high. It has a floating handle, so arranged as to be quickly adjusted for a child or tall person or cutting down embankments, by a thumb-nut acting on the handle and handle irons. It is claimed that the frame is strong and rigid, and cannot be twisted so that the shaft bearings will bind; that no extra metal is used that is not required for strength, the mower being from 5 to 15 pounds lighter than is usually the case; that the best of tempered steel is used, the bearings adjustable, compensating for all wear; that the ratchet is noiseless, there being no wear when the drivers are stopped; that no springs or extra pieces are used; and that the roller arms and reel spiders are made of the best malleable iron.

### Parcel Handle.

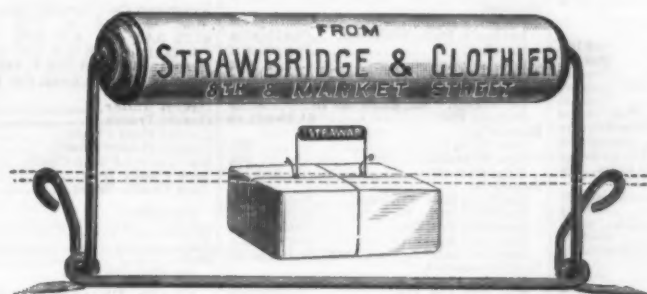
The Tie Company, Sidney, N. Y., Harmon & Dixon, 118 Chambers street, New York, agents, are putting on the market a



The Best Lawn Mower.

or center; also that it is reversible, so it can be used on either the right or the left hand side of the door. It can be placed upon a narrow beading if necessary, the screw holes in the guides and standards being in line. It is referred to as being well made and the regular finish as being bronze, but they can be furnished in any

parcel handle, as illustrated herewith. The cut shows the manner of applying the handle to string of a tied up package. It is stated that by simply pushing the string to the bottom of the bend in the wires, the string is wound automatically around the wire in opposite directions; thus preventing the handle from slipping upon



Parcel Handle.

finish. The Columbia, Fig. 4, is a set-screw lifter, and is designed for transoms hinged at top or center only. It more nearly resembles lifters already handled by the trade, although it is stated that application for patent has been made to cover some of its new features.

the string when the parcel is unbalanced or carried out of a horizontal position.

The Pusey & Jones Company of Wilmington will build a side-wheel iron steamboat for service at Guayaquil, South

America. The dimensions will be: Length, 104 feet; beam, 22 feet; depth of hold, 6½ feet.

### Merchants' Day.

The merchants of Woburn, Mass., by their generous and harmonious efforts, inaugurated a Merchants' Day, Thursday, April 23, which was in every particular a marked success. Free transportation was furnished to the people of the surrounding towns by horse cars and vehicles; a brass band furnished music; a display of fireworks and electric lights turned on at 3 p.m. acted as an additional attraction. It was estimated that there were 5000 strangers that listened, looked and left their dollars. E. G. Clough, the representative hardware merchant of the place, advises us that he had a crowd all the afternoon and evening. Ice cream while they waited from a Jack Frost freezer and hot cookies baked on an oil range proved a loadstone and packed his store. It is the intention of the Woburn merchants to have an annual recurrence of Merchants' Day. Their success in this direction may be suggestive to merchants in other places.

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# CURRENT HARDWARE PRICES.

MAY 6, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Adjusters, Blad.

Domestic..... \$ dos \$3.00, 35¢  
Excelsior..... \$ dos \$10.00, 50¢  
Washburn's Self-Locking..... 30¢

## Ammunition.—

Caps, Percussion, W 1000—  
Klick & Goldmark's and Union Metallic  
Cartridge Co. 25¢  
F. L. Waterproof, 1-10's..... 34¢  
E. B. Trimmed Edge, 1-10's..... 46¢  
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 46¢  
Musket Waterproof, 1-10's..... 50¢  
A. B. Genuine Imported..... 25¢  
Eley's E. B..... 54¢  
Eley's D Waterproof, Central Fire..... \$1.60

## Cartridges—

Arm Fire Cartridges..... 50¢  
Arm Fire Military..... 15¢  
Cent. Fire, Pistol and Rifle..... 25¢  
Cent. Fire, Military and Sporting..... 15¢  
Blank Cartridges, except 22 and 32 cal.,  
additional 10% on above discounts.  
Blank Cartridges, 22 cal., \$1.75..... 2¢  
Blank Cartridges, 32 cal., \$3.50..... 2¢  
Primed Shell and Bullets..... 15¢  
B. E. Caps, Round Ball, \$1.75..... 2¢  
B. E. Caps, Con. Ball, Swgd., \$2.00..... 2¢

## Primers—

Berdan Primers, \$1.00..... 2¢  
B. L. Caps (for Sturtevant Shell) \$1.00..... 2¢  
All other Primers, \$1.20..... 2¢

## Shells—

First quality 4, 8, 10 and 12 gauge..... 25¢  
First quality, 14, 16 and 20 gauge..... 10¢  
List..... 30¢  
Prize..... 40¢  
Star, Club, Rival and Climax brands..... 35¢  
Selbold's Comb. Shot Shells..... 15¢  
Brass Shot Shells, 1st quality..... 60¢  
Brass Shot Shells, Club, Rival, Climax..... 60¢

## Shells Loaded—

Standard List, July 19, 1890..... 40¢  
Wads—Price per M.  
U. M. C. & W. R. A.—B. E., 11 up..... 68¢  
U. M. C. & W. R. A.—B. E., 9&10..... 82¢  
U. M. C. & W. R. A.—B. E., 8..... 96¢  
U. M. C. & W. R. A.—B. E., 7..... \$1.10  
U. M. C. & W. R. A.—P. E., 11 up..... 1.15  
U. M. C. & W. R. A.—P. E., 9&10..... 1.50  
U. M. C. & W. R. A.—P. E., 8..... 1.70  
U. M. C. & W. R. A.—P. E., 7..... 1.80  
Eley's B. E., 11 up..... \$1.75  
Eley's P. E., 11 up..... 2.80

## Anvils—

Eagle Anvil, W 106..... 15¢  
Peter Wright's..... 11¢  
Armstrong's Mouse Hole..... 10¢  
Armstrong's Mouse Hole, Extra..... 12¢  
Trenton..... 10¢  
Wilkinson's..... 10¢  
Moore & Barnes Mfg. Co..... 39¢

## Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢  
Cheney Anvil and Vise..... 25¢  
Allen Anvil and Vise..... 40¢  
Star..... 45¢

## Apple Parers—See Parers, Apple.

## Augers and Bits—

Douglas Mfg. Co..... 70¢  
Wm. A. Ives & Co..... 70¢  
Humphreysville Mfg. Co..... 70¢  
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢  
Rockford Bit Company..... 70¢  
Cook's, Douglas Mfg. Co..... 65¢  
Cook's, N. H. Copper Co..... 60¢  
Ives' Circular Lip..... 60¢  
Patent Solid Head..... 60¢  
C. E. Jennings & Co., No. 10, extension  
up..... 40¢  
C. E. Jennings & Co., No. 30..... 60¢  
C. E. Jennings & Co., Auger Bits, set,  
25¢ quarters, No. 5, 8; No. 30, 35¢  
Lewis' Patent Single Twist..... 45¢  
Russell Jennings' Augers and Bits..... 35¢  
Imitation Jennings' Bits..... 60¢  
Snell's Jennings Pattern..... 60¢  
Fugh's Black..... 20¢  
Rockford, Jennings' Pattern..... 60¢  
Car Bits, P. S. & W. Co..... 60¢  
Snell's Car Bits..... 60¢  
L. Hommedieu Car Bits..... 15¢  
Forster's Pat. Auger Bits..... 20¢  
Cincinnati Bell-Hangers' Bits..... 30¢

## Bit Stock Drills—

Morse Twist Drills..... 80¢  
Standard..... 50¢  
Cleveland..... 50¢  
Syracuse, for metal..... 50¢  
Syracuse, for wood (wood list)..... 80¢  
Williams' or Holt's, for metal..... 50¢  
Williams' or Holt's, for wood..... 40¢  
Cincinnati, for wood..... 30¢  
Cincinnati, for metal..... 45¢

## Expansive Bits—

Clark's small, \$18; large, \$30..... 35¢  
Ives' No. 4, \$ dos \$60..... 40¢  
Awan's..... 40¢  
Steel's, No. 1, \$20; No. 2, \$22..... 35¢  
Stearns' No. 2, \$45..... 30¢

## Gimlet Bits—

Common..... \$ gross \$3.75 @ \$3.25  
Diamond..... \$ dos \$1.10..... 25¢  
Double Cut, Shepherds'..... 45¢

Double Cut, Ct. Valley Mfg. Co..... 30¢  
Double Cut, Hartwell's, \$ gro..... 55¢  
Double Cut, Douglass'..... 40¢  
Double Cut, Ives'..... 60¢

## Hollow Augers—

Ives..... 33¢  
French, Swift & Co..... 33¢  
Douglas..... 33¢  
Bonney's Adjustable, \$ dos \$45..... 40¢  
Stearns'..... 30¢  
Ives' Expansive, each \$4.50..... 50¢  
Universal Expansive, each \$4.50..... 20¢  
Wood's..... 25¢  
Cincinnati Adjustable..... 25¢  
Cincinnati Standard..... 25¢  
Ship Augers and Bits  
L'Hommedieu's..... 15¢  
Watrous'..... 15¢  
Snell's..... 15¢  
Snell's Ship Auger Pat's Car Bits, 15¢

## Awl Hafts—See Hafts, Awl.

## Awls, Brad Sets, &c—

Awls, Sewing, Common \$ gr \$1.70, 35¢  
Awls, Should. Peg, \$ gr \$2.45, 40¢  
Awls, Pat. Peg, \$ gr 63¢..... 40¢  
Awls, Shouldered Brad, 2.70 \$ gr..... 35¢  
Awls, Handled Brad, \$7.50 \$ gr..... 35¢  
Awls, Handled Scratch \$ gr, \$7.50, 35¢  
Awls, Socket Scratch, \$ dos, \$1.50, 25¢  
Awls and Tool Sets—See Sets, Awl and Tool.

## Axes—

First quality, best brands, \$7.00 @ \$7.50  
First qual., other brands..... 6.25¢  
Second quality..... 6.00¢

## Axle Grease—See Grease, Axle.

## Axles—

No. 1, 4¢ @ 5¢, No. 2, 5¢ @ 6¢  
Nos. 7 to 14..... 55¢  
Nos. 15 to 18..... 47¢  
Nos. 19 to 23..... 70¢  
Concord Axles, loose collar..... 5¢  
Concord Axles, solid collar..... 6¢  
National Tubular Self-Oiling..... 35¢

## Bag Holders—See Holders, Bag.

## Balances—

Spring Balances..... 40¢  
Chatillon, \$ dos..... \$0.80 0.95 1.75 net  
Chatillon Straight Balances..... 40¢  
Chatillon Circular Balances..... 50¢

## Bars—

Crow—  
Cast Steel..... 35¢  
Iron, Steel Points..... 5¢

## Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, \$2;  
12-inch, \$2.25; 13½-inch, \$2.75; 15-inch,  
\$3.25.

## Beams, Scale—

Scale Beams, List Jan. 12, '82..... 50¢  
Chatillon's No. 1..... 40¢  
Chatillon's No. 2..... 50¢  
Custer's..... 33¢

## Beaters—

Dover..... \$ dos \$1.50  
Duplex (Standard Co.)..... \$ dos \$1.25  
Rival (Standard Co.)..... \$ dos \$1.00  
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50

Bryant's..... \$ gro \$14.00  
Double (H. & R. Mfg. Co.), \$ gro, No. 0,  
\$15.00; No. 1, \$15.00; No. 2, \$30.00  
Kasy (H. & R. Mfg. Co.)..... \$ gro \$12.00  
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50  
Spiral..... \$ gro \$4.25 @ 4.50  
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00

Paine, Diehl & Co.'s..... \$ gro \$24.00  
Silver & Co..... \$ dos \$5.50

## Culinary—

Keystone, P. D. & C., Each, No. 1, \$1; No.  
2, \$2..... 30¢

## Bells—

Common Wrought..... 60¢  
Western..... 60¢  
Kentucky, "Star"..... 70¢  
Kentucky, Sargent's list..... 70¢  
Dodge, Genuine Kentucky..... 70¢  
Texas Star..... 50¢  
Call..... 40¢  
Farm Bells..... 30¢  
Steel Alloy Church and School Bells..... 40¢

## Door—

Gong, Abbe's..... 35¢  
Gong, Yankee..... 45¢  
Gong, Barker's..... 55¢  
Crank, Taylor's..... 25¢  
Crank Brooks..... 60¢  
Crane Cone's..... 10¢  
Crane, Counsel's..... 20¢  
Lever, Sargent's..... 60¢  
Lever, Taylor's or Plated..... net  
Lever, Taylor's Japanned..... 25¢  
Lever, R. E. M. Co.'s..... 50¢  
Pull, Brook's..... 50¢  
Pull, Western..... 25¢  
Electric..... 20¢  
Bigelow & Dowd..... 20¢  
Taylor's..... 30¢

## Hand—

Light Brass..... 75¢  
Extra Heavy..... 65¢  
White Metal..... 60¢  
Silver Chime..... 35¢  
Globe Cone's Patent..... 35¢

## Bellows—

Blacksmith's..... 60¢  
Molders'..... 40¢  
Hand Bellows..... 40¢

## Belting, Rubber—

Common Standard..... 70¢  
Standard..... 60¢  
Extra..... 60¢  
N. Y. B. & P. Co., Carbon..... 60¢  
N. Y. B. & P. Co., Diamond..... 60¢  
N. Y. B. & P. Co., Para..... 40¢

## Bench Stops—See Stops, Bench.

## Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..... 15¢  
Detroit Perfected Tire Bender..... 15¢

## Bits—

Auger, Gimlet, Bit Stock, Drills, &c.,  
see Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—

Ordinary Tackle, list May 20, 1889..... 60¢  
Cleveland Block Co., Mal. Iron..... 50¢  
Moore's Novelty, Mal. Iron..... 50¢  
Sure Grip Steel Tackle Blocks..... 25¢

## Boards, Move—

Wood Lined "Crystal"..... 50¢  
"Embossed"..... 50¢  
"Oxidized"..... 45¢  
Paper Lined Zinc..... 55¢  
"Crystal"..... 55¢  
"Embossed"..... 55¢  
"Oxidized"..... 45¢

## Bolts—

Carriage, Machine, &c.—  
Com. list June 10, '84..... 75¢  
Genuine Eagle, list Oct. '84..... 75¢  
Phila. pattern, list Oct. '78..... 80¢  
R. B. & W., old list..... 70¢  
Machine, list Jan. 1, 1890..... 75¢  
Bolt Ends, list Jan. 1, 1890..... 75¢

## Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢  
Cast Iron Shutter Bolts..... 70¢  
Cast Iron Chain (Sargent's list)..... 65¢  
Ives' Patent Door Bolts..... 60¢  
Wrought Barrel..... 70¢  
Wrought Square..... 70¢  
Wrt Shutter, all iron, Stanley's..... 60¢  
Wrt Shutter, Brass Knob..... 40¢  
Wrt Shutter, Sargent's list..... 60¢  
Wrt Sunk Flush, Sargent's list..... 55¢  
Wrt Sunk Flush, Stanley's list..... 50¢  
Wrt B. K. Flush, Com'n..... 55¢

## Store and Flow—

Store..... 60¢  
Flow..... 60¢  
R. B. & W., Flow..... 55¢

## Tire—

Common, list Feb. 23, '83..... 65¢  
Port Chester Bolt and Nut Company:  
Empire, list Feb. 23, '83..... 65¢  
Keystone, Philadel., list Oct. '84..... 80¢  
Norway, Phila., list Oct. '84..... 75¢  
American Screw Company:  
Norway, Phila., list Oct. 16, '84..... 75¢  
Phila., list Oct. 16, '84..... 80¢  
Phila., list Oct. 16, '84..... 80¢  
Ray State, list Feb. 23, '83..... 80¢  
R. B. & W., Philadel., list Oct. 16, '84..... 80¢

## Sorers, Tap.

Common and Kind..... 30¢  
Ive's Tap Borers..... 35¢  
Enterprise Mfg. Co..... 30¢  
Clark's..... 35¢

## Borax—

Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Wagon.

Per 5..... 24¢  
Braces  
American Bit Brace Co.:  
Nos. 10, 12, 20..... 60¢  
Nos. 11, 21, 24, 27..... 70¢  
Nos. 22, 23, 25..... 60¢  
Nos. 13, 26, 37..... 70¢  
Ball Braces, net..... \$1.12 to \$1.26

## Amidon's

Barker's Imp'd Plain..... 75¢  
Barker's Imp. Nickel..... 55¢  
Ratchet..... 75¢  
Eclipse Ratchet..... 60¢  
Globe Jawed..... 40¢  
Corner Brace..... 40¢  
Universal, 8 in., \$2.10 10 in..... \$2.25  
Bulalo Ball..... \$1.10 @ \$1.15

## Barber's

Nos. 10 to 16..... 50¢  
Nos. 30 to 33..... 50¢  
Nos. 40 to 63..... 50¢

## Saxton's

Barker's Imp. Polished..... 75¢  
Barker's Imp. Nickel..... 65¢  
Ratchet, Polished..... 50¢  
Ratchet, Nickel..... 40¢  
Buffalo Ball..... net, \$1.10 @ \$1.15

## Bartholomew's

Nos. 25, 27 and 30..... 50¢  
Nos. 117, 118, 119..... 70¢  
Common Ball, American..... \$1.00 @ \$1.10  
Fray's Genuine Spotted's..... 50¢  
Fray's No. 70 to 120, 81 to 123, 207 to 414..... 50¢

## Ives' New Haven Novelty

New Haven Ratchet..... 60¢  
Barber Ratchet..... 60¢  
Barbers..... 60¢  
Spartan..... 60¢  
Osmond's Ratchet..... 40¢  
P. S. & W. Co., Peck's Patent..... 60¢

## Brackets—

Shelf plain, Sargent's list, 55¢  
Shelf, fancy, Sargent's list, 60¢  
Reading, plain..... 50¢  
Reading, Rosette..... 60¢  
Bright Wire Goods—See Wire.

## Broilers—

Hens' Self-Inch..... 9 10 9x11  
Basting, Per dos..... \$4.50 5.50 6.50  
New Haven..... 50¢  
Wire Goods Co..... 65¢

## Buckets, Well.

## Galvanized—

Hill's..... \$ dos, 12 qt, \$4.25; 14 qt, \$5.25  
Iron Clad..... \$ dos, 14 qt, \$4.25 @ \$4.50  
Helwig's Flat Iron Band..... \$3.75  
Helwig's Wired Top..... \$ dos \$4.00

## Bull Rings—See Rings, Bull.

## Butchers' Cleavers—See Cleavers Butchers'.

## Butts—

Brass—  
Wrought Brass..... 75¢  
Cast Brass, Tiebout's..... 50¢  
Cast Brass, Corbin's, Fast..... 35¢  
Cast Brass, Loose Joint..... 35¢

## Cast Iron—

Fast Joint, Narrow..... 50¢  
Fast Joint, Broad..... 50¢  
Loose Joint..... 50¢  
Loose Joint, Japanned..... 50¢  
Loose Joint, Jap, with Acorns..... 50¢  
Parliament Butts..... 70¢  
Mayer's Hinges..... 70¢  
Loose Pin, Acorns..... 70¢  
Loose Pin, Acorns, Japanned..... 70¢  
Loose Pin, Acorns, Japanned, Plated Tips..... 50¢

## Wrought Steel—

Fast Joint, Narrow..... 50¢  
Fast Joint, L. Narrow..... 50¢  
Fast Joint, Broad..... 50¢  
Loose Joint, Broad..... 70¢  
Table Butts, Back Flaps, &c..... 70¢  
Inside Blind, Regular..... 70¢  
Inside Blind, Light..... 70¢  
Loose Pin..... 70¢  
Bronzed Wrought Butts..... 50¢

## Calipers—See Compasses.

## Calks, Toe—

Gautier, One Prong, Blunt..... 5¢  
Burke's, One Prong, Blunt..... 5¢  
Burke's, Two Prong, Blunt..... 7¢  
Burke's, One Prong, Sharp..... 5¢

## Can Openers—See Openers, Can.

## Cards—List January 23, 1891.

Watson's Cotton, Wool, Horse and File..... 25¢

## Carpet Stretchers—See Stretchers Carpet.

## Carpet Sweepers—See Sweepers Carpet.

## Cartridges—See Ammunition.

## Casters—

Bed..... 55¢  
Plate..... 55¢  
Shallow Socket..... 60¢  
Deep Socket..... 40¢  
Yale Casters, list May, 1884..... 30¢  
Yale, Gem..... 30¢  
Martin's Patent (Phoenix)..... 45¢  
Payson's Anti-Friction..... 60¢  
Giant Truck Casters..... 30¢  
Stationary Truck Casters..... 50¢  
Socket Truck Casters..... 60¢

## Cattle Leaders—See Leaders, Cattle.

## Cement.

Victor Elastic..... 5¢ pails W 5¢

## Chain—

Trace, Wagon and Fancy Chains,  
List revised April 21, 1890..... 50¢  
American Coil, in cask lots,  
3-16 3/4 6-16 3/4 7-16 3/4 8-16 3/4  
\$7.75 4.45 4.55 4.60 2.85 3.50 3.40 3.30  
Less than cask lots, add 1/4¢ @ 1/2¢  
German Coil, list Oct. 6, 1890..... 60¢  
German Halter Chain, list Oct. 6, 1890..... 60¢  
Covert Halter..... 60¢  
Covert Traces..... 35¢  
Covert Heel Chain..... 50¢  
Covert Halter Chain..... 50¢  
Galvanized Pump Chain..... 75¢  
Jack Chain, Iron..... 75¢  
Jack Chain, Brass..... 75¢

## Chalk—

White..... \$ gr 60¢  
Red..... \$ gr 70¢  
Blue..... \$ gr 85¢  
See also Crayons.

## Chalk Lines—See Lines.

## Chisels—

Socket Framing and Firmer,  
P. S. & W..... 75¢  
New Haven..... 75¢  
Witherby..... 75¢  
MIX..... 75¢  
Ohio Tool Co..... 75¢  
Douglas..... 75¢  
Buck Bros..... 30¢  
Merrill..... 30¢  
L. & J. White..... 30¢

## Tanged and Miscellaneous.

Tanged Firms..... 40¢  
Butchers'..... \$4.75 @ 5.00  
Spear & Jackson's..... \$5 to \$6  
Buck Bros..... 30¢  
Cold Chisels, W 5..... 15¢



**Chucks-**

Beach Pat.	each, \$8.00	20%
Morse's Adjustable, each	\$7.00, 20@30	25%
Danbury	each, \$6.00, 30@30	25%
Syracuse, Bala Pat.	each, \$3.50	25%
Graham Patent	each, \$3.50	25%
Skinner's Patent	each, \$3.50	25%
Combination Lathe Chucks	each, \$3.50	25%
Universal Lathe Chucks	each, \$3.50	25%
Independent Lathe Chucks	each, \$3.50	25%
Drill Chucks	each, \$3.50	25%
Union Mfg. Co.	each, \$8.50	25%
Victor	each, \$8.50	25%
Combination	each, \$8.50	25%
Universal	each, \$8.50	25%
Independent	each, \$8.50	25%

**Churns.**

Tiffin Union, each, 5 gal.	\$3.25; 7 gal.	\$3.75; 10 gal. \$4.25.
McDermid Star Barrel Churn, each	5 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal. \$3.25.	

**Clamps-**

R. I. Tool Co.'s Wrought Iron	each, \$2.50	25%
Adjustable, Cincinnati	each, \$2.50	25%
Adjustable, Hammers	each, \$2.50	25%
Adjustable, Stearns	each, \$2.50	25%
Stearns' Adjustable Cabinet and Corner	each, \$2.50	25%
Cabinet, Sargent's	each, \$2.50	25%
Carriage Makers', P. S. & W. Co.	each, \$2.50	25%
Eberhard Mfg. Co.	each, \$2.50	25%
Parallel, C. H. Besly & Co.	each, \$2.50	25%
Warner's	each, \$2.50	25%
Saw Clamps, see Vices, Saw Filers		
Carpenters', Cincinnati	each, \$2.50	25%

**Cleavers.**

Butchers'		
Bradley's	each, \$2.50	25%
L. & J. White	each, \$2.50	25%
Beatty's	each, \$2.50	25%
New Haven Edge Tool Co.	each, \$2.50	25%
P. S. & W.	each, \$2.50	25%
Poster Bros.	each, \$2.50	25%
Schulte, Lohoff & Co.	each, \$2.50	25%

**Clips-**

Norway, Axle, 1/4 & 5-16	each, \$5.25	25%
2nd grade Norway Axle, 1/4 & 5-16	each, \$6.25	25%
Superior Axle Clips	each, \$5.25	25%
Norway Spring Bar Clips, 5-16	each, \$5.25	25%
Wrought Iron Felice Clips	each, \$5.25	25%
Steel Felice Clips	each, \$5.25	25%
Baker Axle Clips	each, \$5.25	25%

**Clo. and Netting, Wire-See Wire, &c.****Cocks.**

Cocks, Brass	each, \$5.00	25%
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**Coffee Mills-See Mills, Coffee.****Collars, Dog, &c.**

Medford Fancy Goods Co.	each, \$4.00	10%
Embossed, Gift, Pope & Stevens' list	each, \$3.00	10%
Brass, Pope & Stevens' list	each, \$4.00	10%
Chapman Mfg. Company	each, \$5.00	10%

**Combs, Curry.**

Pitch's	each, \$5.00	10%
Rubber, per doz	\$10.00	20%
Perfect	each, \$5.00	10%

**Compasses, Dividers, &c.-**

Compasses, Callipers, Dividers, 70@70	10%
Bemis & Call Co.'s	
Dividers.....	60@54
Compasses & Callipers.....	60@54
Wing and Inside or Outside.....	60@54
Double.....	60@
(Call's Pat. Inside).....	30@
Excelsior.....	50@
J. Stevens & Co.'s.....	25@104
Starrett's	
Spring Callipers and Dividers.....	25@104
Lock Callipers and Dividers.....	25@
Combination Dividers.....	25@

**Coopers' Tools-See Tools, Coopers.****Cord-**

Sash.		
Common	each, \$10.00	11%
Patent, good quality	each, \$13.00	13%
White Cotton Braided, fair	each, \$20.00	27%
Common Russia Sash	each, \$13.00	13%
Patent	each, \$15.00	15%
Cable Laid Italian Sash	each, \$22.00	23%
Indian Cable Laid	each, \$13.00	13%
Silver Lake		
A Quality, White, 50'	each, \$10.00	10%
A Quality, Drab, 50'	each, \$10.00	10%
B Quality, White, 50'	each, \$10.00	10%
B Quality, Drab, 50'	each, \$10.00	10%
C Quality, White (only)	each, \$10.00	10%
Sylvan Spring, Extra Braided, White, 34'	each, \$10.00	10%
Sylvan Spring, Extra Braided, Drab, 34'	each, \$10.00	10%
Semper Idem, Braided, White, 30'	each, \$10.00	10%
Egyptian, India Hemp, Braided, 25'	each, \$10.00	10%
Braided, White Cotton, 50'	each, \$10.00	10%
Braided, Drab Cotton, 50'	each, \$10.00	10%
Braided, Italian Hemp, 50'	each, \$10.00	10%
Braided, Linen, 80'	each, \$10.00	10%
Fate & Co. Braided Wire, 100 ft.	each, \$5.00	5%
Wire Picture		
Braided or Twisted	each, \$7.50	10%

**Corkscrews-See Screws, Cork.****Corn Knives and Cutters-See Knives, Corn.****Crackers, Nut-**

Table (H. & B. Mfg. Co.)	each, \$4.00	10%
Blake's Pattern	each, \$2.00	10%
Turner & Seymour Mfg. Co.	each, \$5.00	50%

**Cradles-**

Grass	each, \$5.00	25%
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**Crayons.**

White Crayons, 1/2 gr, 12@12	each, \$1.00	10%
D. M. Stewart Mfg. Co., Metal Work-	each, \$2.50	25%
ers, 1/2 gr, \$2.50		
D. M. Stewart Mfg. Co., Rolling Mill	each, \$2.50	25%
See also Chalk		

**Crow Bars-See Bars, Crow.****Curry Combs-See Combs, Curry.****Curtain Pins-See Pins, Curtain.****Cutters-**

Meat.		
Dixon's	each, \$14.00	10%
Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
Woodruff's	each, \$14.00	10%
Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%

**Hales Pattern**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**American**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Enterprise**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Great American Meat Cutter**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Miles' Challenge**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Home No. 1**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Draw Cut, each**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Great American**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Beef Shavers (Enterprise)**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Little Giant**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Chadborn's Smoked Beef Cutter**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Tobacco**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Wood Bottom**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**All Iron**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Nashua Lock Co.**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Wilson's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Sargent's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Acme**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Smith's Pat.**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Johnson's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Penny's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Appleton's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Bonney's**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Cincinnati**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Cutlery-**

Pocket and Table	each, \$17.00	10%
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**Wostenholm**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Dampers, &c-**

Dampers, Buffalo	each, \$17.00	10%
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**Buffalo Damper Clips**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Crown Damper**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Excelsior**

Nos. 1, 2, 3, 4	each, \$17.00, \$19.00, \$20.00	10%
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**Diggers, Post Hole, &c-**

Samson Post Hole Digger	each, \$36.00	25%
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**Fletcher Post Hole Augers**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Eureka Diggers**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Lead's**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Vaughan's Post Hole Auger**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Kohler's Little Giant**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Kohler's Hercules**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Kohler's New Champion**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Schneider**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Ryan's Post Hole Diggers**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Cronk's Post Bars**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Gibbs Post Hole Digger**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Imperial**

Nos. 1, 2, 3, 4	each, \$36.00, \$42.00, \$48.00	25%
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**Dividers-**

See Compasses		
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**Dog Collars-See Collars, Dog, &c.****Door Springs-See Springs, Door.****Drawers.**

Money, 1/2 doz	each, \$18.00	20%
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**Drawing Knives-See Knives, Drawing.****Drills and Drill Stocks-**

Blacksmiths'	each, \$1.75	10%
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**Blacksmiths' Self-Feeding**

Nos. 1, 2, 3, 4	each, \$7.50, \$10.00, \$12.50	10%
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**Breast, F. S. & W.**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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**Breast, Wilson's**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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**Breast, Millers Falls**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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**Breast, Bartholomew's**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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**Ratchet, Merrill's**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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**Ratchet, Ingersoll's**

Nos. 1, 2, 3, 4	each, \$10.00, \$12.50, \$15.00	10%
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Boggin's Latches.....\$ doz 30¢@35¢  
 Bronze Iron Drop Latches.....\$ doz 70¢ net  
 Jap'd Store Door Handles—Nuts, 1.02;  
 Plate, 1.10; no Plate, 1.08;  
 Barn Door, \$ doz 1.40.....10¢10¢  
 Chest and Lifting.....70¢

## Wood—

Saw and Plane.....40¢10¢@40¢10¢  
 Hammer, Hatchet, Axe, Sledge, &c.....40¢  
 Brad A.W.I.....\$ gr 2.00  
 Hickory Firmer Chisel, ass'd.....\$ gr 4.50  
 Hickory Firmer Chisel, large.....\$ gr 5.00  
 Apple Firmer Chisel, ass'd.....\$ gr 5.00  
 Apple Firmer Chisel, large.....\$ gr 6.00  
 Socket Firmer Chisel, ass'd.....\$ gr 8.00  
 Socket Framing Chisel, ass'd.....\$ gr 5.00  
 I. S. Smith & Co.'s Pat File.....60¢  
 File, assorted.....\$ gr 7.50  
 Auger, assorted.....\$ gr 5.00  
 Auger, large.....\$ gr 7.00  
 Pat. Auger, Ives.....\$ doz 10¢  
 Pat. Auger, Douglass.....\$ set 1.25  
 Pat. Auger, Swan's.....\$ set 1.00  
 Hoe, Rake, Shovel, &c.....\$ doz 10¢

## Hangers—

Barn Door, old patterns.....\$ doz 10¢10¢@70¢  
 Barn Door, New England.....\$ doz 10¢10¢@70¢  
 Ramson Steel Anti-Friction.....55¢  
 Orleans Steel.....55¢  
 Hamilton Patent Wood Track.....55¢  
 U. S. Wood Track.....55¢  
 Champion.....60¢10¢  
 Rider and Wooster, Medina Mfg. Co.'s  
 List.....70¢  
 Climax Anti-Friction.....55¢  
 Climax Anti-Friction for Wood Tracks.....55¢  
 Zenith for Wood Tracks.....55¢  
 Reed's Steel Arm.....55¢  
 Challenge, Barn Door.....50¢  
 Sterling.....50¢10¢10¢  
 Victor, No. 1, \$15.00; No. 2, \$16.50; No.  
 3, \$18.00.....50¢25¢  
 Overlure.....50¢10¢  
 Kidder's.....50¢10¢10¢  
 Best Anti-Friction.....50¢10¢  
 Duplex (Wood Track).....50¢10¢5¢  
 Terry's Pat., \$ doz pr. 4 in, \$10.00; 5 in,  
 \$12.00.....50¢10¢  
 Terry's Steel Anti-Friction Leader.....50¢10¢  
 Terry's Steel Anti-Friction Ideal.....50¢10¢  
 Cronk's Patent Steel Covered.....50¢5¢  
 Wood Track Iron Clad, \$ ft. 10¢.....50¢  
 Carrier Steel Anti-Friction.....50¢10¢  
 Architect, \$ set \$5.00.....20¢  
 Bellows.....20¢10¢  
 Pelix, \$ set \$4.50.....20¢  
 Richards.....20¢10¢10¢  
 Lane's Standard.....50¢50¢5¢  
 Lane's New Standard.....50¢50¢5¢  
 Ball Bearing Door Hanger.....50¢10¢25¢10¢  
 Warner's Pat.....50¢10¢20¢10¢10¢  
 Stearns' Anti-Friction.....50¢10¢20¢10¢10¢  
 Stearns' Challenge.....50¢10¢25¢10¢10¢  
 Franklin.....40¢40¢45¢  
 American, \$ set \$4.00.....50¢10¢  
 Rider & Wooster, No. 1, 55¢; No. 2,  
 75¢.....40¢  
 Paragon, Nos. 1, 2 and 3.....40¢10¢  
 Cincinnati.....25¢10¢  
 Paragon, Nos. 5, 6, 7 and 8.....20¢10¢  
 Crescent.....60¢10¢10¢  
 Nickel Malleable Iron and Steel.....40¢  
 Scranton Anti-Friction Single Strap.....35¢  
 Wild West, 4 in. Wheel, \$15.00; 5 in.,  
 Wheel, \$21.00.....45¢  
 Star.....40¢10¢40¢10¢5¢  
 Barry, \$6.00.....50¢5¢10¢  
 Interstate.....50¢  
 Magic.....45¢

## Harness Snaps—See Snaps.

## Hatchets—

American Axe and Tool Co.  
 Blood's.....40¢10¢  
 Hunt's.....40¢10¢  
 Hunt's.....40¢10¢  
 Mann's.....40¢10¢  
 Peck's.....40¢10¢  
 Underhill's.....40¢10¢  
 Buffalo Hammer Co.....50¢5¢  
 Fayette R. Plumb.....50¢5¢  
 C. Hammond & Son.....50¢5¢  
 Sargent & Co.....50¢5¢  
 P. S. & W. Co.....50¢5¢  
 Ten Eyck Edge Tool Co.....10¢  
 Collins.....50¢50¢5¢  
 Schulte, Lohoff & Co.....50¢50¢5¢

## Hay and Straw Knives—See

## Knives.

## Hinges—

Blind Hinges—  
 Parker.....75¢25¢  
 Palmer.....50¢55¢10¢  
 Seymour.....70¢25¢  
 Butler.....60¢  
 Clark's, Nos. 1, 3, 5, 10 and 50.....75¢10¢5¢80¢  
 Clark's Mortise Gravity.....50¢  
 Sargent's, Nos. 1, 3, 5, 11, 13.....75¢10¢55¢10¢5¢  
 Sargent's, No. 12.....77¢10¢10¢  
 Reading's Gravity.....75¢10¢75¢10¢5¢  
 Shepard's.....75¢10¢  
 Noiseless.....75¢10¢  
 Niagara.....80¢  
 Buffalo.....80¢  
 Clark's Genuine Pattern.....80¢  
 O. S., Lull & Porter.....75¢10¢  
 Acme, Lull & Porter.....75¢  
 Queen City Reversible.....70¢10¢5¢75¢  
 Clark's Lull & Porter, Nos. 0, 1, 1 1/2,  
 2, 2 1/2, 3.....75¢10¢25¢  
 North's Automatic Blind Fixtures, No.  
 2, for Wood, \$9.00; No. 3, for Brick,  
 \$11.50.....10¢

## Gate Hinges—

Western.....\$ doz \$4.40, 60¢  
 N. E.....\$ doz \$7.00, 55¢  
 N. E. Reversible.....\$ doz \$5.20, 55¢10¢  
 Clark's, Nos. 1, 2, 3.....60¢10¢5¢  
 V. Y. State.....\$ doz \$5.00, 55¢10¢  
 Automatic.....\$ doz \$13.50, 50¢  
 Common Sense.....\$ doz pair \$4.50, 50¢  
 Seymour's.....45¢10¢  
 Shepard's.....60¢10¢5¢  
 Reed's Latch and Hinges.....\$ doz \$12.00, 50¢

## Spring Hinges—

Union Spring and Blank Butts.....40¢  
 Fear's Spring Hinge Co.'s List, March  
 1886.....20¢

Acme.....30¢  
 J. S.....25¢10¢  
 Empire and Crown.....20¢  
 Hero and Monarch.....55¢  
 American, Gem, and Star.....20¢  
 Oxford.....20¢  
 Barker's Double Acting.....25¢  
 Union Mfg. Co.....25¢  
 Bommer's.....30¢  
 Buckman's.....15¢20¢  
 Chicago.....30¢  
 Wiles.....10¢  
 Devore's.....40¢  
 Bell.....40¢  
 Royal.....60¢  
 Reliable.....60¢  
 Champion.....60¢  
 Bardley's Patent.....40¢  
 Stearn's.....10¢10¢  
 Niagara, Holdback pattern, per  
 gross.....\$14.00

## Wrought Iron Hinges

List February 14, 1891.  
 Corrugated Strap and T.....50¢10¢  
 Strap Hook and Eye.....\$ 6 to 12 in., \$ 1.40  
 14 to 20 in., \$ 1.50  
 22 to 30 in., \$ 1.75  
 32 to 40 in., \$ 2.00  
 42 to 50 in., \$ 2.25  
 52 to 60 in., \$ 2.50  
 62 to 70 in., \$ 2.75  
 72 to 80 in., \$ 3.00  
 82 to 90 in., \$ 3.25  
 92 to 100 in., \$ 3.50  
 102 to 110 in., \$ 3.75  
 112 to 120 in., \$ 4.00  
 122 to 130 in., \$ 4.25  
 132 to 140 in., \$ 4.50  
 142 to 150 in., \$ 4.75  
 152 to 160 in., \$ 5.00  
 162 to 170 in., \$ 5.25  
 172 to 180 in., \$ 5.50  
 182 to 190 in., \$ 5.75  
 192 to 200 in., \$ 6.00  
 202 to 210 in., \$ 6.25  
 212 to 220 in., \$ 6.50  
 222 to 230 in., \$ 6.75  
 232 to 240 in., \$ 7.00  
 242 to 250 in., \$ 7.25  
 252 to 260 in., \$ 7.50  
 262 to 270 in., \$ 7.75  
 272 to 280 in., \$ 8.00  
 282 to 290 in., \$ 8.25  
 292 to 300 in., \$ 8.50  
 302 to 310 in., \$ 8.75  
 312 to 320 in., \$ 9.00  
 322 to 330 in., \$ 9.25  
 332 to 340 in., \$ 9.50  
 342 to 350 in., \$ 9.75  
 352 to 360 in., \$ 10.00  
 362 to 370 in., \$ 10.25  
 372 to 380 in., \$ 10.50  
 382 to 390 in., \$ 10.75  
 392 to 400 in., \$ 11.00  
 402 to 410 in., \$ 11.25  
 412 to 420 in., \$ 11.50  
 422 to 430 in., \$ 11.75  
 432 to 440 in., \$ 12.00  
 442 to 450 in., \$ 12.25  
 452 to 460 in., \$ 12.50  
 462 to 470 in., \$ 12.75  
 472 to 480 in., \$ 13.00  
 482 to 490 in., \$ 13.25  
 492 to 500 in., \$ 13.50  
 502 to 510 in., \$ 13.75  
 512 to 520 in., \$ 14.00  
 522 to 530 in., \$ 14.25  
 532 to 540 in., \$ 14.50  
 542 to 550 in., \$ 14.75  
 552 to 560 in., \$ 15.00  
 562 to 570 in., \$ 15.25  
 572 to 580 in., \$ 15.50  
 582 to 590 in., \$ 15.75  
 592 to 600 in., \$ 16.00  
 602 to 610 in., \$ 16.25  
 612 to 620 in., \$ 16.50  
 622 to 630 in., \$ 16.75  
 632 to 640 in., \$ 17.00  
 642 to 650 in., \$ 17.25  
 652 to 660 in., \$ 17.50  
 662 to 670 in., \$ 17.75  
 672 to 680 in., \$ 18.00  
 682 to 690 in., \$ 18.25  
 692 to 700 in., \$ 18.50  
 702 to 710 in., \$ 18.75  
 712 to 720 in., \$ 19.00  
 722 to 730 in., \$ 19.25  
 732 to 740 in., \$ 19.50  
 742 to 750 in., \$ 19.75  
 752 to 760 in., \$ 20.00  
 762 to 770 in., \$ 20.25  
 772 to 780 in., \$ 20.50  
 782 to 790 in., \$ 20.75  
 792 to 800 in., \$ 21.00  
 802 to 810 in., \$ 21.25  
 812 to 820 in., \$ 21.50  
 822 to 830 in., \$ 21.75  
 832 to 840 in., \$ 22.00  
 842 to 850 in., \$ 22.25  
 852 to 860 in., \$ 22.50  
 862 to 870 in., \$ 22.75  
 872 to 880 in., \$ 23.00  
 882 to 890 in., \$ 23.25  
 892 to 900 in., \$ 23.50  
 902 to 910 in., \$ 23.75  
 912 to 920 in., \$ 24.00  
 922 to 930 in., \$ 24.25  
 932 to 940 in., \$ 24.50  
 942 to 950 in., \$ 24.75  
 952 to 960 in., \$ 25.00  
 962 to 970 in., \$ 25.25  
 972 to 980 in., \$ 25.50  
 982 to 990 in., \$ 25.75  
 992 to 1000 in., \$ 26.00

## Hoses—

D. & H. Scovill.....20¢  
 Lane's Crescent Pattern Pattern.....45¢5¢  
 Lane's Razor Blade, Scovill Pattern.....30¢  
 Maynard, S. & O. Pat.....45¢5¢  
 Sandusky Tool Co., S. & O. Pat.....50¢10¢5¢  
 Am. Axe and Tool Co., S. & O. Pat.....50¢10¢5¢  
 Chattanooga Tool Co., S. & O. Pat.....50¢10¢5¢  
 Grab.....60¢10¢

## Handled—

Garden, Mortar, &c.....65¢5¢65¢10¢  
 Planter's, Cotton &c.....65¢5¢65¢10¢  
 Warren Hoe.....60¢  
 Magic.....\$ doz \$4.00

## Hoe Rings and Hinges—See

## Rings and Hinges.

## Hoisting Apparatus—See

## Machines, Hoisting.

## Hollow Ware—See Ware, Hollow.

## Holders.

Bag  
 Sprengle's Pat.....\$ doz \$18.....60¢  
 Bit  
 Extension, Barber's \$ doz \$15.00.....40¢10¢10¢  
 Ives, \$ doz \$20.00.....60¢5¢60¢10¢  
 Diagonal.....\$ doz \$24.00, 40¢  
 Angular.....\$ doz \$24.00, 40¢5¢  
 File and Tool—  
 Bais Pat.....\$ doz \$4.00; 25¢  
 Nicholson File Holders.....20¢  
 Dick's Tool Holder.....20¢

## Hooks—

Cast Iron—  
 Bird Cage, Sargent's list.....\$ doz 10¢10¢10¢  
 Bird Cage, Reading.....\$ doz 10¢10¢10¢  
 Clothes Line, Sargent's list.....\$ doz 10¢10¢10¢  
 Clothes Line, Reading list.....\$ doz 10¢10¢10¢  
 Ceiling Sargent's list.....\$ doz 10¢10¢10¢  
 Reading list.....\$ doz 10¢10¢10¢  
 Coat and Hat, Sargent's list.....\$ doz 10¢10¢10¢  
 Coat and Hat, Reading.....\$ doz 10¢10¢10¢  
 Cotton.....\$ doz \$1.25  
 Cotton Pat. (N. Y. Mallet & Handle Wks.).....30¢  
 Tassel and Picture (T. & S. Mfg. Co.).....50¢  
 Wrought Staples, Hooks, &c.....See Wrought Goods.  
 Wire—  
 Wire Coat and Hat, Gem, list April,  
 1886.....60¢  
 Wire Coat and Hat, Miller, list April,  
 1886.....60¢  
 Indestructible Coat and Hat.....45¢  
 Wire Coat and Hat, Standard.....60¢  
 Handy Hat and Coat.....50¢10¢  
 Steady Ceiling Hooks.....50¢10¢  
 Belt.....80¢80¢10¢  
 Atlas, Coat and Hat.....60¢

## Miscellaneous.

Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50  
 Noll's Grass.....\$ doz \$2.25  
 Bush.....55¢60¢  
 Whitmore's Patent.....55¢  
 Hooks and Eyes—Malleable Iron.....70¢70¢10¢  
 Hooks and Eyes—Brass.....60¢10¢10¢  
 Fish Hooks, American.....50¢  
 Bench Hooks.....See Bench Stops.

## Horse Nails—See Nails, Horse.

## Horse Shoes—See Shoes, Horse.

## Hose, Rubber—

Competition.....75¢75¢5¢  
 Standard.....60¢10¢5¢60¢10¢10¢  
 Extra.....40¢10¢60¢  
 N. Y. B. & P. Co., Para.....25¢5¢  
 N. Y. B. & P. Co., Extra.....40¢40¢5¢  
 N. Y. B. & P. Co., Dundee.....40¢10¢60¢

## Huskers—

Blair's Adjustable.....\$ gr \$8.00  
 Blair's Adjustable Clipper.....\$ gr 7.00  
 Hubbard's Solid Steel.....\$ gr 4.50

## Indurated Fiber Ware—See

## Ware, Indurated Fiber.

## Irons.

Sad—  
 From 4 to 10, at factory.....\$ 100 \$,  
 \$2.30@2.40  
 Self-Heating.....\$ doz \$9.00 net  
 Self-Heating, Tailors'.....\$ doz \$18.00 net  
 Mrs. Pott's Irons.....50¢5¢  
 Enterprise Star Irons.....50¢5¢  
 XX Cold Handle Sad Irons.....50¢5¢

Ideal Irons new list.....50¢10¢50¢10¢10¢  
 Salamander, Irons.....25¢  
 B. B. Sad Irons.....\$ 3 @35¢  
 Combined Fluter and Sad Iron, \$ doz.....15¢  
 Fox Reversible Self-Fluter \$ doz \$24.00  
 Chinese Laundry (N.E. Butt Co.) 8 1/2, 15¢  
 New England.....50¢, 15¢  
 Mahony's Troy Pol. Irons.....25¢  
 Sensible, list Jan. 91.....50¢10¢5¢  
 Sensible Tailor's Irons.....33¢4¢  
 National Self-Heating.....30¢

## Soldering—

Soldering Coppers.....\$ 23 @23¢  
 Cover's Adjustable, list Jan. 1 1886.....35¢25¢

## Irons, Pinking, per doz., 65¢.

## Jack Screws—See Screws.

## Jacks, Wagon.

Daisy.....33¢4¢  
 Victor.....33¢4¢

## Kettles—

Brass, Spun, Plain, list Jan. 1, '91.....75¢5¢  
 Brass, Spun, Pld. W.M. list Jan. 1, '91.....20¢  
 Enameled and Tea—See Hollow Ware.

## Keys—

Lock Ass'n list Dec. 30, 1886.....50¢10¢  
 Eagle, Cabinet, &c.....60¢5¢  
 Hotchkiss' Brass Blanks.....40¢2¢  
 Hotchkiss, Copper and Tinned.....40¢  
 Hotchkiss, Pld. and Cab.....35¢  
 Ratchet Bed Keys.....\$ doz \$4.00, 15¢  
 Wollensak Tinned.....50¢10¢

## Knife Sharpeners—See Sharpen-

## ers, Knife.

## Knives.

Butcher, Shoe, &c—  
 Wilson's Butcher Knives, list Dec. 8,  
 1890.....25¢  
 Ames' Butcher Knives.....25¢  
 Foster Bros' Butcher, &c.....40¢  
 Jordan's A.A.I., Butchers', list.....net  
 Nichols' Butcher Knives.....40¢10¢  
 W. W. Wilson, Butcher, 6 in., \$2.00; 7  
 in., \$2.70; 8 in., \$3.80, &c.....20¢25¢  
 Ames' Bread Knives, \$ doz \$1.50, 15¢20¢  
 Moran's Shoe and Bread.....30¢  
 Hay and Straw.....See Hay Knives.  
 Table and Pocket.....See Cutlery.  
 Corn, Auburn Mfg. Co. Western Pat.....\$2.00  
 Corn Auburn Mfg. Co. Crescent.....\$3.50  
 O'rr  
 Bradley's.....10¢  
 Wadsworth's.....35¢

## Drawing—

Witherby.....\$ 75 @ 75¢10¢  
 P. S. & W.....\$ 75 @ 75¢10¢  
 Mix.....\$ 75 @ 75¢10¢  
 New Haven.....\$ 60 @ 60¢10¢10¢5¢  
 Merrill.....\$ 75 @ 75¢25¢  
 Douglas.....\$ 15 @ 15¢25¢  
 Watrous.....\$ 15 @ 15¢25¢  
 L. & J. White.....\$ 30 @ 30¢5¢  
 Bradley's.....\$ 25 @ 25¢35¢  
 Adjustable Handle.....\$ 25 @ 25¢35¢  
 Wilson's Folding.....\$ 25 @ 25¢35¢  
 Hay and Straw.....\$ 18 @ 18¢50¢  
 Lightning, Mfrs' price \$ doz \$18.00, 25¢  
 But jobbers cut this price freely,  
 often selling at \$8 @ \$8.50.  
 Wadsworth's.....\$ 40 @ 40¢10¢  
 Carter's Needle.....\$ 11 @ 11¢10¢  
 Heath's.....\$ 13 @ 13¢10¢15¢  
 Auburn Hay, Com. and Spear Point.....60¢  
 Auburn Straw.....\$ 40 @ 40¢10¢  
 Noll's Hay.....\$ 40 @ 40¢10¢  
 Mining,  
 Am. (3d quality), \$ gr., 1 blade, \$7;  
 2 blades, \$12; 3 blades, \$18.....net  
 Lothrop's.....\$ 20 @ 20¢10¢  
 Smith's, \$ doz, Single, \$2.00; Double, \$3  
 40¢45¢  
 Knapp & Cowles.....\$ 50 @ 50¢10¢  
 Buffalo Adjustable.....\$ 40 @ 40¢10¢  
 Buffalo Double Adj'table, \$ doz \$2.00 25¢

## Knobs—

Door Mineral.....60¢65¢  
 Door Por. Jap'd.....70¢75¢  
 Door Por. Nickel.....\$ 32 @ 32¢25¢  
 Door Por. Plated, Nickel.....\$ 22 @ 22¢25¢  
 Driver, Porcelain.....\$ 60 @ 60¢10¢10¢  
 Homestead Door Knobs.....40¢10¢50¢  
 Yale & Towne Wood, list Dec. 1886.....40¢  
 Furniture Plain.....75¢ gr 10¢, 10¢  
 Furniture, Wood Screws.....25¢10¢  
 Base, Rubber Tip.....70¢10¢5¢  
 Picture, Judd's.....60¢10¢10¢70¢  
 Picture, Sargent's.....70¢10¢  
 Picture, Homestead.....55¢5¢  
 Shutter, Porcelain.....65¢10¢  
 Carriage, Jap.....\$ gr 80¢, 60¢10¢  
 Bardley's Wood Door, Shutter, &c.....40¢

## Ladders—

Melting, Sargent's.....55¢10¢  
 Melting, Reading.....35¢10¢  
 Melting, Monroe's Pat.....\$ doz \$4.00, 40¢  
 Melting, P. S. & W.....35¢10¢40¢  
 Melting, Warner's.....30¢

## Lanterns—

Plain with Guards, \$ doz.....\$3.75  
 Lift Wire, with Guards.....\$3.75  
 Square Plain, with Guards.....\$3.75  
 Sq. Lift Wire, with Guards.....\$4.50  
 Without Guards, 25¢ \$ doz less.

## Police Lanterns (including packages).

2 1/2-inch Bull's-eye Police regular.....\$ doz \$3.50  
 3-inch Bull's-eye Police regular.....\$ doz \$3.50  
 2 1/2-inch Bull's-eye Police flash light.....\$ doz \$4.00  
 3-inch Bull's-eye Police flash light.....\$ doz \$4.50

## Lawn Mowers—See Mowers, Lawn.

## Leaders, Cattle.

Humason, Beckley & Co.'s.....70¢  
 Sargent's.....60¢10¢  
 Hotchkiss.....60¢10¢  
 Peck, Stow & W. Co.....60¢10¢

## Lemon Squeezers—See Squeezers,

## Lemon.

## Lifters, Transom.

Wollensak's & 4, Bronzed Iron.....50¢  
 Class 3 and 4, Bronze Metal.....25¢  
 Class 3 and 4, Brass.....25¢  
 Skylight Lifters.....35¢  
 Crown, Lacie and Shield.....50¢  
 Reuther's, list Feb. 20, 1891.....50¢  
 Bronze, Iron Irons.....50¢10¢10¢  
 Brass, Real Bronze or Nickel Plate.....30¢

Excelsior.....50¢10¢25¢  
 Shaw's.....50¢10¢  
 Payson's:  
 Universal.....60¢  
 Solid Grip.....60¢  
 Imperial.....50¢10¢

## Lines—

Cotton and Linen Fish, Draper's.....50¢  
 Draper's and Tate's Chalk.....50¢  
 Draper's Mason's Linen, 54 ft., No. 1,  
 \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4,  
 \$2.75; No. 5, \$3.25.....25¢  
 Cotton Chalk.....55¢  
 Samsor Cotton, No. 4, \$2; No. 4 1/2, \$2.50;  
 10¢

Silver Lake, Braided, No. 3, \$ 0; No.  
 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50;  
 gro.....25¢  
 Mason's Linen, No. 3 1/2, \$1.50; No. 4,  
 \$2.00; No. 4 1/2, \$2.50.....45¢  
 Mason's Colored Cotton.....45¢  
 Wire Clothes.....\$ 10 @ 10¢  
 100 ft.....\$4.00 \$3.50 \$3.00  
 Ventilator, Cord Samsor Braided  
 White or Drab Cotton.....\$ doz \$7.50, 20¢

## Locks, &amp;c.—

Cabinet—  
 Eagle, Gaylord Par.....list March '84, rev  
 ker and Corbin.....Jan. 1, '85, 30¢45¢  
 Delta, Nos. 36 to 39.....40¢  
 Delta, Nos. 51 to 63.....40¢10¢  
 Delta, Nos. 80 to 96.....30¢  
 Stoddard Lock Co.....30¢25¢  
 "Champion" Night Latches.....40¢40¢10¢  
 Barnes Mfg. Co.....40¢40¢10¢  
 Eagle and Corbin Trunk.....35¢25¢  
 "Champion" Cab. and Combin.....35¢4¢  
 Yale.....net prices  
 Romer's.....35¢

## Door Locks, Latches, &amp;c.

R. & E. Mfg. Co., list March 30,  
 1889.....55¢10¢70¢  
 Mallory, Wheeler & Co., list  
 July, '88.....lower net  
 Sargent & Co., list March 1, '88  
 Reading Hardware Co., list  
 Feb. 2, '88.....prices  
 Brittan, Graham & Mathes, list Jan.  
 1890.....often  
 Perkins' Burglar Proof.....made  
 Barnes Mfg. Co.....60¢10¢10¢  
 Barnes Mfg. Co.....30¢45¢10¢  
 Yale.....net prices  
 Delta Flat Key.....30¢  
 L. & C. Round Key Latches.....30¢10¢  
 L. & C. Flat Key Latches.....35¢4¢10¢  
 Romer's Night Latches.....15¢  
 Brooklyn Latches.....50¢10¢  
 Sheperdson or U. S.....30¢  
 Seed's N. Y. Hasp Lock.....35¢



Shepard Hand Fluter, No. 110 # dos \$11.00  
 Shepard Hand Fluter, No. 98 # dos \$8.00  
 Clark's Hand Fluter # dos \$15.00  
 Combined Fluter and Sad Iron # dos \$15.00  
 Buffalo # dos \$10.00

**Hoisting—**  
 Moore's Hand Hoist, with Lock # dos \$20.00  
 Brake # dos \$20.00  
 Moore's Differential Pulley Block # dos \$20.00  
 Energy Mfg. Co.'s # dos \$20.00  
 Sure Grip Steel Tackle Blocks # dos \$20.00

**Washing—**  
 Anthony Wayne # dos No. 1, \$51; No. 2, \$45; No. 3, \$43  
 Western Star # dos No. 2, \$45; No. 3, \$48

**Walleys—**  
 Hickory # dos \$20.10  
 Lignumvitae # dos \$20.10  
 B. & L. Block Co., Hickory & L. V. # dos \$20.10

**Mattocks, Regular List—**  
 # dos \$10.00

**Measures—**  
 Standard Fireware, No. 1, peck, # dos \$4.00  
 do, # dos \$3.50

**Meat Cutters—See Cutters, Meat.**

**Mills—**  
 Coffee # dos \$10.00

**Box and Side, List Jan. 1, 1888—**  
 American, Enterprise Mfg Co. # dos \$10.00  
 The Swift, Lane Bros. # dos \$10.00

**Mining Knives—See Knives, Mining.**

**Melasses Gates—See Gates, Melasses.**

**Money Drawers—See Drawers, Money.**

**Mowers, Lawn.**

**Pennsylvania, New Model, Excelsior, Continental, &c. # dos \$10.00**

**Philadelphia # dos \$10.00**

**Perfection # dos \$10.00**

**Easy # dos \$10.00**

**Other Machines # dos \$10.00**

**Guzzles—**

**Safety # dos \$3.00, 25 #**

**Nails—**

**Cut and Wire. See Trade Report.**

**Wire Nails, Papered.**

**Association list, July 18, '89 # dos \$10.00**

**Tack Mfrs. list # dos \$10.00**

**Wire Nails, Standard Penny.**

**Card June 1, '89, base # dos \$2.35**

**Horse—**

**Nos. 6 7 8 9 10**

**Ausable # dos \$2.35, 25 # dos \$2.35**

**Clinton, Fin. 19 # dos \$1.15, 15 # dos \$1.15**

**Essex # dos \$2.35, 25 # dos \$2.35**

**Lyra # dos \$1.15, 15 # dos \$1.15**

**Snowden # dos \$1.15, 15 # dos \$1.15**

**Putnam # dos \$1.15, 15 # dos \$1.15**

**Vulcan # dos \$1.15, 15 # dos \$1.15**

**Northwestern # dos \$1.15, 15 # dos \$1.15**

**Globe # dos \$1.15, 15 # dos \$1.15**

**Boston # dos \$1.15, 15 # dos \$1.15**

**A. C. # dos \$1.15, 15 # dos \$1.15**

**C. B. K. # dos \$1.15, 15 # dos \$1.15**

**Maud S. # dos \$1.15, 15 # dos \$1.15**

**Champlain # dos \$1.15, 15 # dos \$1.15**

**New Haven # dos \$1.15, 15 # dos \$1.15**

**Saranac # dos \$1.15, 15 # dos \$1.15**

**Champion # dos \$1.15, 15 # dos \$1.15**

**Capwell # dos \$1.15, 15 # dos \$1.15**

**Star # dos \$1.15, 15 # dos \$1.15**

**Anchor # dos \$1.15, 15 # dos \$1.15**

**Western # dos \$1.15, 15 # dos \$1.15**

**Empire Branded # dos \$1.15, 15 # dos \$1.15**

**Refuge # dos \$1.15, 15 # dos \$1.15**

**Brass Head, Sargent's list # dos \$10.00**

**Brass Head, Combination list # dos \$10.00**

**Porcelain Head, Sargent's list # dos \$10.00**

**Porcelain Head, Combination list # dos \$10.00**

**Wiley Patent # dos \$10.00**

**Nail Pullers—See Pullers, Nail.**

**Nail Sets—See Sets, Nail.**

**Nut Crackers—See Crackers, Nut.**

**Nuts—List Dec. 18, 1889.**

**Hot Pressed # dos \$4.00, 6.00 off list.**

**Cold Punched # dos \$4.00, 6.00 off list.**

**In packages of 100 # add 1-10 # #**

**net; in packages less than 100 # add 1-10 # #, net.**

**Oakum—**

**Best # dos \$7.00, 7.00 #**

**U. S. Navy # dos \$7.00, 7.00 #**

**Navy # dos \$7.00, 7.00 #**

**Oilers—**

**Zinc and Tin # dos \$10.00, 7.00 #**

**Brass and Copper # dos \$10.00, 7.00 #**

**Malleable, Hammer's Improved, No. 1 # dos \$3.00, No. 2, \$4.00; No. 3, \$4.40 # dos \$10.00**

**Malleable, Hammer's Old Pattern, same list # dos \$10.00**

**Prior's Pat. or "Paragon" Zinc # dos \$10.00**

**Prior's Pat. or "Paragon" Brass # dos \$10.00**

**Olstead's Tin and Zinc # dos \$10.00**

**Olstead's Brass and Copper # dos \$10.00**

**Broughton's Zinc # dos \$10.00**

**Broughton's Brass # dos \$10.00**

**Gem P. D. & Co. # dos \$10.00**

**Steel, Draper and Williams # dos \$10.00**

**World's Best, # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00 # dos \$10.00**

**Universal, # dos \$5.00 # dos \$5.00**

**Domestic # dos \$2.50 # dos \$2.50**

**Champion # dos \$2.00 # dos \$2.00**

**Packing, Steam—**

**Rubber—**

**Standard # dos \$0.25, 0.50 # dos \$0.25, 0.50**

**Extra # dos \$0.25, 0.50 # dos \$0.25, 0.50**

**N. Y. B. & P. Co., Standard # dos \$0.25, 0.50**

**N. Y. B. & P. Co., Empire # dos \$0.25, 0.50**

**N. Y. B. & P. Co., Salamander # dos \$0.25, 0.50**

**Jenkins' Standard # dos \$0.25, 0.50**

**Miscellaneous—**

**Russia Packing # dos \$0.15, 0.15 # dos \$0.15, 0.15**

**Italian Packing # dos \$0.15, 0.15 # dos \$0.15, 0.15**

**Cotton Packing # dos \$0.15, 0.15 # dos \$0.15, 0.15**

**Jute # dos \$0.15, 0.15 # dos \$0.15, 0.15**

**Padlocks—See Locks.**

**Pails—**

**Galvanized Iron—**

**Quarts 10 12 14**

**Hill's Light Weight # dos \$2.75, 3.00, 3.25**

**Hill's Heavy Weight # dos \$2.75, 3.00, 3.25**

**Helwig's # dos \$2.75, 3.00, 3.25**

**Sidney Shepard & Co. # dos \$2.75, 3.00, 3.25**

**Iron Clad # dos \$2.75, 3.00, 3.25**

**Fire Buckets # dos \$2.75, 3.00, 3.25**

**Buckets, see Well Buckets.**

**Indurated Fibre Ware—25 #**

**Star Pails, 12 qt. # dos \$6.00**

**Fire, Stable and Milk, 14 qt. # dos \$7.50**

**Standard Fibre Ware—**

**Plain, Dec'd # dos \$4.00, 4.50, 5.00**

**Water Pails, 12 qt., per doz. # dos \$4.00, 4.50, 5.00**

**Dairy Pails, 14 qt., per doz. # dos \$4.00, 4.50, 5.00**

**Fire Pails, No. 1, 12 qt., per doz. # dos \$4.00, 4.50, 5.00**

**Fire Pails, No. 2, 14 qt., per doz. # dos \$4.00, 4.50, 5.00**

**Sugar Pails # dos \$4.00, 4.50, 5.00**

**Horse Pails # dos \$4.00, 4.50, 5.00**

**Buggy Pails # dos \$4.00, 4.50, 5.00**

**Slop Jars (bal. trap) # dos \$4.00, 4.50, 5.00**

**Chamber Pails, 14 qt. # dos \$4.00, 4.50, 5.00**

**Pans—**

**Dripping # dos \$4.00, 4.50, 5.00**

**Small, size # dos \$4.00, 4.50, 5.00**

**Large sizes # dos \$4.00, 4.50, 5.00**

**Silver & Co. (Covered) # dos \$4.00, 4.50, 5.00**

**Standard List—**

**No. 1 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 2 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 3 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 4 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 5 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 6 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 7 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 8 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 9 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 10 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 11 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 12 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 13 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 14 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 15 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 16 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 17 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 18 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 19 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 20 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 21 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 22 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 23 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 24 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 25 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 26 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 27 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 28 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 29 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 30 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 31 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 32 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 33 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 34 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 35 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 36 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 37 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 38 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 39 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 40 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 41 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 42 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**No. 43 # dos \$3.00, 3.75, 4.25, 4.75, 5.25**

**Iron Planes—**

**Bailey's (Stanley R. & L. Co.) # dos \$10.00, 10.00, 10.00**

**Miscellaneous Planes (Stanley R. & L. Co.) # dos \$10.00, 10.00, 10.00**

**Victor Planes (Stanley R. & L. Co.) # dos \$10.00, 10.00, 10.00**

**Steer's Iron Planes # dos \$10.00, 10.00, 10.00**

**Merfien Mal Iron Co.'s # dos \$10.00, 10.00, 10.00**

**Davies' Iron Planes # dos \$10.00, 10.00, 10.00**

**Birmingham Plane Co. # dos \$10.00, 10.00, 10.00**

**Gage Tool Co.'s Self-Setting # dos \$10.00, 10.00, 10.00**

**Chaplin's Iron Planes # dos \$10.00, 10.00, 10.00**

**Sargent's # dos \$10.00, 10.00, 10.00**

**Standard Tool Co. # dos \$10.00, 10.00, 10.00**

**Plane Irons—**

**Butcher's # dos \$5.00, 5.25, 5.50**

**Buck Bros # dos \$5.00, 5.25, 5.50**

**Auburn # dos \$5.00, 5.25, 5.50**

**Ohio # dos \$5.00, 5.25, 5.50**

**Sandusky # dos \$5.00, 5.25, 5.50**

**S. & I. J. White # dos \$5.00, 5.25, 5.50**

**Atkins' Circular Shingle and Heading** dis 50%  
**Atkins' Silver Steel Diamond X Cuts** X foot 70%  
**Atkins' Special Steel Dexter X Cuts** X foot 50%  
**Atkins' Special Steel Diamond X Cuts** X foot 32%  
**Atkins' Champion and Electric Tooth** X Cuts X foot 30%  
**Atkins' Hollow Hack X Cuts** X foot 20%  
**Atkins' Mulch and Drag** 40%  
**Atkins' One-Man Saw, with handles** X foot 40%  
**Peace Circular and Mill** 45%  
**Peace Hand Panel and Rip** 25%  
**Peace Cross Cuts** 45%  
**Richardson's Circular and Mill** 45%  
**Richardson's X Cuts** 45%  
**Richardson's Hand, &c.** 25%  
**C. E. Jennings & Co., Hand, Panel and Rip** 25%  
**Jack Saw—**  
**Griffin's complete** 40%  
**Griffin's Hack Saw, Blades** 40%  
**Star Hack Saws and Blades** 25%  
**Eureka and Crescent** 25%  
**Scroll—**  
**Ester, complete** \$10.00 25%  
**Barnes' complete** \$4.00 25%  
**Barnes' Builders' and Cabinet Makers'** 15%  
**Barnes' Scroll Saw Blades** 35%  
**Saw Frames—See Frames, Saw.**  
**Saw Sets—See Sets, Saw.**  
**Saw Tools—See Tools, Saw.**  
**Scales—**  
**Hatch, Counter, No. 171, good quality** X foot 21.00  
**Hatch, Tea, No. 161** X foot \$6.75  
**Union Platform, Plain** \$2.10  
**Union Platform, Striped** \$2.40  
**Chattillon's Grocers' Trip Scales** 50%  
**Chattillon's Eureka** 25%  
**Chattillon's Favorite** 40%  
**Family, Turnbulla** 30%  
**Riehle Bros.' Platform** 40%  
**Scale Beams—See Beams, Scale.**  
**Scissors, Fluting** 45%  
**Scrapers—**  
**Adjustable Box Scraper (S. R. & L. Co.)** \$4.50 30%  
**Box, 1 Handle** X foot \$4.00 10%  
**Box, 2 Handle** X foot \$6.00 10%  
**Defiance Box and Ship** 30%  
**Foot** 50%  
**Ship, Common** X foot \$3.50 10%  
**Ship, R. I. Tool Co.** 10%  
**Screen Window and Door Frames—See Frames.**  
**Screw Drivers—See Drivers, Screw.**  
**Screws.**  
**Bench and Hand—**  
**Bench, Iron** 55%  
**Bench, Wood** 55%  
**Bench, Wood, Hickory** 55%  
**Hand, Wood** 55%  
**Lag, Blunt Point, list Jan. 1, 1890, 75¢**  
**Coch and Lag, Gimlet Point, list Jan. 1, 1890** 75¢  
**Bed** 55%  
**Hand Rail, Sargent's** 55%  
**Hand Rail, H. & F. Mfg. Co.** 70%  
**Hand Rail, Am. Screw Co.** 70%  
**Jack Screws, Millers Falls list** 50%  
**Jack Screws, P. S. & W.** 35%  
**Jack Screws, Sargent's** 50%  
**Jack Screws, Stearns'** 40%  
**Corb—**  
**Humason & Beckley Mfg. Co.** 40%  
**Williamson's** 35%  
**Howe Bros. & Hulbert** 35%  
**Machine—**  
**Flat Head, Iron** 55%  
**Round Head, Iron** 55%  
**Wood—**  
**List January 1, 1891.**  
**Flat Head Iron** 75%  
**Round Head Iron** 75%  
**Flat Head Brass** 75%  
**Round Head Brass** 75%  
**Flat Head Bronze** 75%  
**Round Head Bronze** 75%  
**Rogers' Drive Screws** 35%  
**Scroll Saws—See Saws, Scroll.**  
**Scythes.**  
**Grass** 40%  
**Grass** 40%  
**Scythe Snaths—See Snaths, Scythe.**  
**Sets.**  
**Avi and Tool.**  
**Alken's Sets, Avils and Tools** 55%  
**Pray's Adj. Tool Hds., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100**  
**Miller's Falls Adj. Tool Hds.** 25%  
**Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100**  
**Heavy's Combination Hart** X foot \$6.50  
**Brad Sets** No. 45, \$10.50; No. 45, \$12.50; No. 45, \$14.50; No. 45, \$16.50; No. 45, \$18.50; No. 45, \$20.50; No. 45, \$22.50; No. 45, \$24.50; No. 45, \$26.50; No. 45, \$28.50; No. 45, \$30.50; No. 45, \$32.50; No. 45, \$34.50; No. 45, \$36.50; No. 45, \$38.50; No. 45, \$40.50; No. 45, \$42.50; No. 45, \$44.50; No. 45, \$46.50; No. 45, \$48.50; No. 45, \$50.50; No. 45, \$52.50; No. 45, \$54.50; No. 45, \$56.50; No. 45, \$58.50; No. 45, \$60.50; No. 45, \$62.50; No. 45, \$64.50; No. 45, \$66.50; No. 45, \$68.50; No. 45, \$70.50; No. 45, \$72.50; No. 45, \$74.50; No. 45, \$76.50; No. 45, \$78.50; No. 45, \$80.50; No. 45, \$82.50; No. 45, \$84.50; No. 45, \$86.50; No. 45, \$88.50; No. 45, \$90.50; No. 45, \$92.50; No. 45, \$94.50; No. 45, \$96.50; No. 45, \$98.50; No. 45, \$100.50; No. 45, \$102.50; No. 45, \$104.50; No. 45, \$106.50; No. 45, \$108.50; No. 45, \$110.50; No. 45, \$112.50; No. 45, \$114.50; No. 45, \$116.50; No. 45, \$118.50; No. 45, \$120.50; No. 45, \$122.50; No. 45, \$124.50; 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No. 45, \$574.50; No. 45, \$576.50; No. 45, \$578.50; No. 45, \$580.50; No. 45, \$582.50; No. 45, \$584.50; No. 45, \$586.50; No. 45, \$588.50; No. 45, \$590.50; No. 45, \$592.50; No. 45, \$594.50; No. 45, \$596.50; No. 45, \$598.50; No. 45, \$600.50; No. 45, \$602.50; No. 45, \$604.50; No. 45, \$606.50; No. 45, \$608.50; No. 45, \$610.50; No. 45, \$612.50; No. 45, \$614.50; No. 45, \$616.50; No. 45, \$618.50; No. 45, \$620.50; No. 45, \$622.50; No. 45, \$624.50; No. 45, \$626.50; No. 45, \$628.50; No. 45, \$630.50; No. 45, \$632.50; No. 45, \$634.50; No. 45, \$636.50; No. 45, \$638.50; No. 45, \$640.50; No. 45, \$642.50; No. 45, \$644.50; No. 45, \$646.50; No. 45, \$648.50; No. 45, \$650.50; No. 45, \$652.50; No. 45, \$654.50; No. 45, \$656.50; No. 45, \$658.50; No. 45, \$660.50; No. 45, \$662.50; No. 45, \$664.50; No. 45, \$666.50; No. 45, \$668.50; No. 45, \$670.50; No. 45, \$672.50; No. 45, \$674.50; No. 45, \$676.50; No. 45, \$678.50; No. 45, \$680.50; No. 45, \$682.50; No. 45, \$684.50; No. 45, \$686.50; No. 45, \$688.50; No. 45, \$690.50; No. 45, \$692.50; No. 45, \$694.50; No. 45, \$696.50; No. 45, \$698.50; No. 45, \$700.50; No. 45, \$702.50; No. 45, \$704.50; No. 45, \$706.50; No. 45, \$708.50; No. 45, \$710.50; No. 45, \$712.50; No. 45, \$714.50; No. 45, \$716.50; No. 45, \$718.50; No. 45, \$720.50; No. 45, \$722.50; No. 45, \$724.50; No. 45, \$726.50; No. 45, \$728.50; No. 45, \$730.50; No. 45, \$732.50; No. 45, \$734.50; No. 45, \$736.50; No. 45, \$738.50; No. 45, \$740.50; No. 45, \$742.50; No. 45, \$744.50; No. 45, \$746.50; No. 45, \$748.50; No. 45, \$750.50; No. 45, \$752.50; No. 45, \$754.50; No. 45, \$756.50; No. 45, \$758.50; No. 45, \$760.50; No. 45, \$762.50; No. 45, \$764.50; No. 45, \$766.50; No. 45, \$768.50; No. 45, \$770.50; No. 45, \$772.50; No. 45, \$774.50; No. 45, \$776.50; No. 45, \$778.50; No. 45, \$780.50; No. 45, \$782.50; No. 45, \$784.50; No. 45, \$786.50; No. 45, \$788.50; No. 45, \$790.50; No. 45, \$792.50; No. 45, \$794.50; No. 45, \$796.50; No. 45, \$798.50; No. 45, \$800.50; No. 45, \$802.50; No. 45, \$804.50; No. 45, \$806.50; No. 45, \$808.50; No. 45, \$810.50; No. 45, \$812.50; No. 45, \$814.50; No. 45, \$816.50; No. 45, \$818.50; No. 45, \$820.50; No. 45, \$822.50; No. 45, \$824.50; No. 45, \$826.50; No. 45, \$828.50; No. 45, \$830.50; No. 45, \$832.50; No. 45, \$834.50; No. 45, \$836.50; No. 45, \$838.50; No. 45, \$840.50; No. 45, \$842.50; No. 45, \$844.50; No. 45, \$846.50; No. 45, \$848.50; No. 45, \$850.50; No. 45, \$852.50; No. 45, \$854.50; No. 45, \$856.50; No. 45, \$858.50; No. 45, \$860.50; No. 45, \$862.50; No. 45, \$864.50; No. 45, \$866.50; No. 45, \$868.50; No. 45, \$870.50; No. 45, \$872.50; No. 45, \$874.50; No. 45, \$876.50; No. 45, \$878.50; No. 45, \$880.50; No. 45, \$882.50; No. 45, \$884.50; No. 45, \$886.50; No. 45, \$888.50; No. 45, \$890.50; No. 45, \$892.50; No. 45, \$894.50; No. 45, \$896.50; No. 45, \$898.50; No. 45, \$900.50; No. 45, \$902.50; No. 45, \$904.50; No. 45, \$906.50; No. 45, \$908.50; 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No. 45, \$1126.50; No. 45, \$1128.50; No. 45, \$1130.50; No. 45, \$1132.50; No. 45, \$1134.50; No. 45, \$1136.50; No. 45, \$1138.50; No. 45, \$1140.50; No. 45, \$1142.50; No. 45, \$1144.50; No. 45, \$1146.50; No. 45, \$1148.50; No. 45, \$1150.50; No. 45, \$1152.50; No. 45, \$1154.50; No. 45, \$1156.50; No. 45, \$1158.50; No. 45, \$1160.50; No. 45, \$1162.50; No. 45, \$1164.50; No. 45, \$1166.50; No. 45, \$1168.50; No. 45, \$1170.50; No. 45, \$1172.50; No. 45, \$1174.50; No. 45, \$1176.50; No. 45, \$1178.50; No. 45, \$1180.50; No. 45, \$1182.50; No. 45, \$1184.50; No. 45, \$1186.50; No. 45, \$1188.50; No. 45, \$1190.50; No. 45, \$1192.50; No. 45, \$1194.50; No. 45, \$1196.50; No. 45, \$1198.50; No. 45, \$1200.50; No. 45, \$1202.50; No. 45, \$1204.50; No. 45, \$1206.50; No. 45, \$1208.50; No. 45, \$1210.50; No. 45, \$1212.50; No. 45, \$1214.50; No. 45, \$1216.50; No. 45, \$1218.50; No. 45, \$1220.50; No. 45, \$1222.50; No. 45, \$1224.50; No. 45, \$1226.50; No. 45, \$1228.50; No. 45, \$1230.50; 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Wire Brads & Nails, see Nails, Wire.	
Steel Wire Brads, R. & E. Mfg. Co.'s	50¢105
Wire, List.....	50¢105
<b>Tapes, Measuring—</b>	
American.....	40¢405
Spring.....	405
Chesterman's, Regular List.....	25¢305
<b>Thermometers—</b>	
Tin Case.....	80¢80105
<b>Thimble Skeins—See Skeins.</b>	
<b>Ties, Bale—Steel</b>	
Standard Wire, List.....	50¢105
<b>Tinners' Shears, &amp;c.—See Shears,</b>	
<b>Tinners', &amp;c.</b>	
<b>Tinware—</b>	
Stamped, Japaned and Piced, List	
Jan. 30 1887.....	70¢1070105
<b>Tire Benders, Upsetters, &amp;c.—</b>	
<b>See Benders and Upsetters, Tire.</b>	
<b>Tools.</b>	
<b>Coopers—</b>	
Bradley's.....	205
Barton's.....	30¢205
L. & J. White.....	305
Albertson Mfg. Co.....	305
Beatty's.....	305
Sandusky Tool Co.....	305
Shaves, Cincinnati Tool Co.....	305
<b>Lumber.</b>	
Ring Peavies, "Blue Line".....	205
Ring Peavies, Common.....	205
Steel Socket Peavies.....	205
Mail Iron Socket Peavies.....	205
Cant Hooks, "Blue Line".....	205
Cant Hooks, Common Finish.....	205
Cant Hooks, Mail Socket Clasp, "Blue	
Line" Finish.....	205
Cant Hooks, Mail Socket Clasp, Com-	
mon Finish.....	205
Cant Hooks, Chip Clasp, "Blue Line"	
Finish.....	205
Cant Hooks, Chip Clasp, Common Fin-	
ish.....	205
Hand Spikes.....	205
Pike Poles, Pike & Hook.....	205
11 ft., 12 ft., 13 ft., 14 ft., 15 ft.,	
16 ft., 17 ft., 18 ft., 19 ft., 20 ft.,	
21 ft., 22 ft., 23 ft., 24 ft., 25 ft.,	
26 ft., 27 ft., 28 ft., 29 ft., 30 ft.,	
31 ft., 32 ft., 33 ft., 34 ft., 35 ft.,	
36 ft., 37 ft., 38 ft., 39 ft., 40 ft.,	
41 ft., 42 ft., 43 ft., 44 ft., 45 ft.,	
46 ft., 47 ft., 48 ft., 49 ft., 50 ft.,	
51 ft., 52 ft., 53 ft., 54 ft., 55 ft.,	
56 ft., 57 ft., 58 ft., 59 ft., 60 ft.,	
61 ft., 62 ft., 63 ft., 64 ft., 65 ft.,	
66 ft., 67 ft., 68 ft., 69 ft., 70 ft.,	
71 ft., 72 ft., 73 ft., 74 ft., 75 ft.,	
76 ft., 77 ft., 78 ft., 79 ft., 80 ft.,	
81 ft., 82 ft., 83 ft., 84 ft., 85 ft.,	
86 ft., 87 ft., 88 ft., 89 ft., 90 ft.,	
91 ft., 92 ft., 93 ft., 94 ft., 95 ft.,	
96 ft., 97 ft., 98 ft., 99 ft., 100 ft.,	
101 ft., 102 ft., 103 ft., 104 ft., 105 ft.,	
106 ft., 107 ft., 108 ft., 109 ft., 110 ft.,	
111 ft., 112 ft., 113 ft., 114 ft., 115 ft.,	
116 ft., 117 ft., 118 ft., 119 ft., 120 ft.,	
121 ft., 122 ft., 123 ft., 124 ft., 125 ft.,	
126 ft., 127 ft., 128 ft., 129 ft., 130 ft.,	
131 ft., 132 ft., 133 ft., 134 ft., 135 ft.,	
136 ft., 137 ft., 138 ft., 139 ft., 140 ft.,	
141 ft., 142 ft., 143 ft., 144 ft., 145 ft.,	
146 ft., 147 ft., 148 ft., 149 ft., 150 ft.,	
151 ft., 152 ft., 153 ft., 154 ft., 155 ft.,	
156 ft., 157 ft., 158 ft., 159 ft., 160 ft.,	
161 ft., 162 ft., 163 ft., 164 ft., 165 ft.,	
166 ft., 167 ft., 168 ft., 169 ft., 170 ft.,	
171 ft., 172 ft., 173 ft., 174 ft., 175 ft.,	
176 ft., 177 ft., 178 ft., 179 ft., 180 ft.,	
181 ft., 182 ft., 183 ft., 184 ft., 185 ft.,	
186 ft., 187 ft., 188 ft., 189 ft., 190 ft.,	
191 ft., 192 ft., 193 ft., 194 ft., 195 ft.,	
196 ft., 197 ft., 198 ft., 199 ft., 200 ft.,	
201 ft., 202 ft., 203 ft., 204 ft., 205 ft.,	
206 ft., 207 ft., 208 ft., 209 ft., 210 ft.,	
211 ft., 212 ft., 213 ft., 214 ft., 215 ft.,	
216 ft., 217 ft., 218 ft., 219 ft., 220 ft.,	
221 ft., 222 ft., 223 ft., 224 ft., 225 ft.,	
226 ft., 227 ft., 228 ft., 229 ft., 230 ft.,	
231 ft., 232 ft., 233 ft., 234 ft., 235 ft.,	
236 ft., 237 ft., 238 ft., 239 ft., 240 ft.,	
241 ft., 242 ft., 243 ft., 244 ft., 245 ft.,	
246 ft., 247 ft., 248 ft., 249 ft., 250 ft.,	
251 ft., 252 ft., 253 ft., 254 ft., 255 ft.,	
256 ft., 257 ft., 258 ft., 259 ft., 260 ft.,	
261 ft., 262 ft., 263 ft., 264 ft., 265 ft.,	
266 ft., 267 ft., 268 ft., 269 ft., 270 ft.,	
271 ft., 272 ft., 273 ft., 274 ft., 275 ft.,	
276 ft., 277 ft., 278 ft., 279 ft., 280 ft.,	
281 ft., 282 ft., 283 ft., 284 ft., 285 ft.,	
286 ft., 287 ft., 288 ft., 289 ft., 290 ft.,	
291 ft., 292 ft., 293 ft., 294 ft., 295 ft.,	
296 ft., 297 ft., 298 ft., 299 ft., 300 ft.,	
301 ft., 302 ft., 303 ft., 304 ft., 305 ft.,	
306 ft., 307 ft., 308 ft., 309 ft., 310 ft.,	
311 ft., 312 ft., 313 ft., 314 ft., 315 ft.,	
316 ft., 317 ft., 318 ft., 319 ft., 320 ft.,	
321 ft., 322 ft., 323 ft., 324 ft., 325 ft.,	
326 ft., 327 ft., 328 ft., 329 ft., 330 ft.,	
331 ft., 332 ft., 333 ft., 334 ft., 335 ft.,	
336 ft., 337 ft., 338 ft., 339 ft., 340 ft.,	
341 ft., 342 ft., 343 ft., 344 ft., 345 ft.,	
346 ft., 347 ft., 348 ft., 349 ft., 350 ft.,	
351 ft., 352 ft., 353 ft., 354 ft., 355 ft.,	
356 ft., 357 ft., 358 ft., 359 ft., 360 ft.,	
361 ft., 362 ft., 363 ft., 364 ft., 365 ft.,	
366 ft., 367 ft., 368 ft., 369 ft., 370 ft.,	
371 ft., 372 ft., 373 ft., 374 ft., 375 ft.,	
376 ft., 377 ft., 378 ft., 379 ft., 380 ft.,	
381 ft., 382 ft., 383 ft., 384 ft., 385 ft.,	
386 ft., 387 ft., 388 ft., 389 ft., 390 ft.,	
391 ft., 392 ft., 393 ft., 394 ft., 395 ft.,	
396 ft., 397 ft., 398 ft., 399 ft., 400 ft.,	
401 ft., 402 ft., 403 ft., 404 ft., 405 ft.,	
406 ft., 407 ft., 408 ft., 409 ft., 410 ft.,	
411 ft., 412 ft., 413 ft., 414 ft., 415 ft.,	
416 ft., 417 ft., 418 ft., 419 ft., 420 ft.,	
421 ft., 422 ft., 423 ft., 424 ft., 425 ft.,	
426 ft., 427 ft., 428 ft., 429 ft., 430 ft.,	
431 ft., 432 ft., 433 ft., 434 ft., 435 ft.,	
436 ft., 437 ft., 438 ft., 439 ft., 440 ft.,	
441 ft., 442 ft., 443 ft., 444 ft., 445 ft.,	
446 ft., 447 ft., 448 ft., 449 ft., 450 ft.,	
451 ft., 452 ft., 453 ft., 454 ft., 455 ft.,	
456 ft., 457 ft., 458 ft., 459 ft., 460 ft.,	
461 ft., 462 ft., 463 ft., 464 ft., 465 ft.,	
466 ft., 467 ft., 468 ft., 469 ft., 470 ft.,	
471 ft., 472 ft., 473 ft., 474 ft., 475 ft.,	
476 ft., 477 ft., 478 ft., 479 ft., 480 ft.,	
481 ft., 482 ft., 483 ft., 484 ft., 485 ft.,	
486 ft., 487 ft., 488 ft., 489 ft., 490 ft.,	
491 ft., 492 ft., 493 ft., 494 ft., 495 ft.,	
496 ft., 497 ft., 498 ft., 499 ft., 500 ft.,	
501 ft., 502 ft., 503 ft., 504 ft., 505 ft.,	
506 ft., 507 ft., 508 ft., 509 ft., 510 ft.,	
511 ft., 512 ft., 513 ft., 514 ft., 515 ft.,	
516 ft., 517 ft., 518 ft., 519 ft., 520 ft.,	
521 ft., 522 ft., 523 ft., 524 ft., 525 ft.,	
526 ft., 527 ft., 528 ft., 529 ft., 530 ft.,	
531 ft., 532 ft., 533 ft., 534 ft., 535 ft.,	
536 ft., 537 ft., 538 ft., 539 ft., 540 ft.,	
541 ft., 542 ft., 543 ft., 544 ft., 545 ft.,	
546 ft., 547 ft., 548 ft., 549 ft., 550 ft.,	
551 ft., 552 ft., 553 ft., 554 ft., 555 ft.,	
556 ft., 557 ft., 558 ft., 559 ft., 560 ft.,	
561 ft., 562 ft., 563 ft., 564 ft., 565 ft.,	
566 ft., 567 ft., 568 ft., 569 ft., 570 ft.,	
571 ft., 572 ft., 573 ft., 574 ft., 575 ft.,	
576 ft., 577 ft., 578 ft., 579 ft., 580 ft.,	
581 ft., 582 ft., 583 ft., 584 ft., 585 ft.,	
586 ft., 587 ft., 588 ft., 589 ft., 590 ft.,	
591 ft., 592 ft., 593 ft., 594 ft., 595 ft.,	
596 ft., 597 ft., 598 ft., 599 ft., 600 ft.,	
601 ft., 602 ft., 603 ft., 604 ft., 605 ft.,	
606 ft., 607 ft., 608 ft., 609 ft., 610 ft.,	
611 ft., 612 ft., 613 ft., 614 ft., 615 ft.,	
616 ft., 617 ft., 618 ft., 619 ft., 620 ft.,	
621 ft., 622 ft., 623 ft., 624 ft., 625 ft.,	
626 ft., 627 ft., 628 ft., 629 ft., 630 ft.,	
631 ft., 632 ft., 633 ft., 634 ft., 635 ft.,	
636 ft., 637 ft., 638 ft., 639 ft., 640 ft.,	
641 ft., 642 ft., 643 ft., 644 ft., 645 ft.,	
646 ft., 647 ft., 648 ft., 649 ft., 650 ft.,	
651 ft., 652 ft., 653 ft., 654 ft., 655 ft.,	
656 ft., 657 ft., 658 ft., 659 ft., 660 ft.,	
661 ft., 662 ft., 663 ft., 664 ft., 665 ft.,	
666 ft., 667 ft., 668 ft., 669 ft., 670 ft.,	
671 ft., 672 ft., 673 ft., 674 ft., 675 ft.,	
676 ft., 677 ft., 678 ft., 679 ft., 680 ft.,	
681 ft., 682 ft., 683 ft., 684 ft., 685 ft.,	
686 ft., 687 ft., 688 ft., 689 ft., 690 ft.,	
691 ft., 692 ft., 693 ft., 694 ft., 695 ft.,	
696 ft., 697 ft., 698 ft., 699 ft., 700 ft.,	
701 ft., 702 ft., 703 ft., 704 ft., 705 ft.,	
706 ft., 707 ft., 708 ft., 709 ft., 710 ft.,	
711 ft., 712 ft., 713 ft., 714 ft., 715 ft.,	
716 ft., 717 ft., 718 ft., 719 ft., 720 ft.,	
721 ft., 722 ft., 723 ft., 724 ft., 725 ft.,	
726 ft., 727 ft., 728 ft., 729 ft., 730 ft.,	
731 ft., 732 ft., 733 ft., 734 ft., 735 ft.,	
736 ft., 737 ft., 738 ft., 739 ft., 740 ft.,	
741 ft., 742 ft., 743 ft., 744 ft., 745 ft.,	
746 ft., 747 ft., 748 ft., 749 ft., 750 ft.,	
751 ft., 752 ft., 753 ft., 754 ft., 755 ft.,	
756 ft., 757 ft., 758 ft., 759 ft., 760 ft.,	
761 ft., 762 ft., 763 ft., 764 ft., 765 ft.,	
766 ft., 767 ft., 768 ft., 769 ft., 770 ft.,	
771 ft., 772 ft., 773 ft., 774 ft., 775 ft.,	
776 ft., 777 ft., 778 ft., 779 ft., 780 ft.,	
781 ft., 782 ft., 783 ft., 784 ft., 785 ft.,	
786 ft., 787 ft., 788 ft., 789 ft., 790 ft.,	
791 ft., 792 ft., 793 ft., 794 ft., 795 ft.,	
796 ft., 797 ft., 798 ft., 799 ft., 800 ft.,	
801 ft., 802 ft., 803 ft., 804 ft., 805 ft.,	
806 ft., 807 ft., 808 ft., 809 ft., 810 ft.,	
811 ft., 812 ft., 813 ft., 814 ft., 815 ft.,	
816 ft., 817 ft., 818 ft., 819 ft., 820 ft.,	
821 ft., 822 ft., 823 ft., 824 ft., 825 ft.,	
826 ft., 827 ft., 828 ft., 829 ft., 830 ft.,	
831 ft., 832 ft., 833 ft., 834 ft., 835 ft.,	
836 ft., 837 ft., 838 ft., 839 ft., 840 ft.,	
841 ft., 842 ft., 843 ft., 844 ft., 845 ft.,	
846 ft., 847 ft., 848 ft., 849 ft., 850 ft.,	
851 ft., 852 ft., 853 ft., 854 ft., 855 ft.,	
856 ft., 857 ft., 858 ft., 859 ft., 860 ft.,	
861 ft., 862 ft., 863 ft., 864 ft., 865 ft.,	
866 ft., 867 ft., 868 ft., 869 ft., 870 ft.,	
871 ft., 872 ft., 873 ft., 874 ft., 875 ft.,	
876 ft., 877 ft., 878 ft., 879 ft., 880 ft.,	
881 ft., 882 ft., 883 ft., 884 ft., 885 ft.,	
886 ft., 887 ft., 888 ft., 889 ft., 890 ft.,	
891 ft., 892 ft., 893 ft., 894 ft., 895 ft.,	
896 ft., 897 ft., 898 ft., 899 ft., 900 ft.,	
901 ft., 902 ft., 903 ft., 904 ft., 905 ft.,	
906 ft., 907 ft., 908 ft., 909 ft., 910 ft.,	
911 ft., 912 ft., 913 ft., 914 ft., 915 ft.,	
916 ft., 917 ft., 918 ft., 919 ft., 920 ft.,	
921 ft., 922 ft., 923 ft., 924 ft., 925 ft.,	
926 ft., 927 ft., 928 ft., 929 ft., 930 ft.,	
931 ft., 932 ft., 933 ft., 934 ft., 935 ft.,	
936 ft., 937 ft., 938 ft., 939 ft., 940 ft.,	
941 ft., 942 ft., 943 ft., 944 ft., 945 ft.,	
946 ft., 947 ft., 948 ft., 949 ft., 950 ft.,	
951 ft., 952 ft., 953 ft., 954 ft., 955 ft.,	
956 ft., 957 ft., 958 ft., 959 ft., 960 ft.,	
961 ft., 962 ft., 963 ft., 964 ft., 965 ft.,	
966 ft., 967 ft., 968 ft., 969 ft., 970 ft.,	
971 ft., 972 ft., 973 ft., 974 ft., 975 ft.,	
976 ft., 977 ft., 978 ft., 979 ft., 980 ft.,	
981 ft., 982 ft., 983 ft., 984 ft., 985 ft.,	
986 ft., 987 ft., 988 ft., 989 ft., 990 ft.,	
991 ft., 992 ft., 993 ft., 994 ft., 995 ft.,	
996 ft., 997 ft., 998 ft., 999 ft., 1000 ft.,	

<b>Mouse and Hat—</b>	
Mouse Wood Choker.....	11¢12
Mouse, Round Wire.....	10¢
Mouse, Cage, Wire.....	10¢
Mouse, Catch-em-alive.....	10¢
Mouse, Bonanza.....	10¢
Rat, Decoy.....	10¢
Ideal.....	10¢
Cyclone.....	10¢
Hotchkiss Metallic Mouse, 5-hole traps, 7 dos., 90¢; in full cases, 7 dos., 75¢	
Hotchkiss Imp. Rat Killer.....	10¢
Hotchkiss New Rat Killer.....	10¢
Schuyler's Rat Killer.....	10¢
<b>Trimmers—</b>	
Butter and cheese.....	25¢
<b>Trimmers, Spoke.</b>	
Bonney's.....	10¢
Stearns.....	10¢
Ives, No. 1, \$15.00; No. 2, \$12.00.....	10¢
Douglas.....	10¢
Cincinnati.....	10¢
<b>Trowels—</b>	
Lothrop's Brick and Plastering.....	10¢
Reed's Brick and Plastering.....	10¢
Diamond's Brk and Plastering.....	10¢
Peace's Plastering.....	10¢
Clement & Maynard's.....	10¢
Rose's Brick.....	10¢
Brade's Brick.....	10¢
Worral's Brick and Plastering.....	10¢
Garden.....	10¢
<b>Trucks, Warehouse, &amp;c.—</b>	
R. & L. Block Co.'s List, '82.....	10¢
<b>Tubes, Boiler—</b>	
See Pipe.	
<b>Twine—</b>	
Flax Twine.....	10¢
No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 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622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 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1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 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Atkins' Circular Shingle and Heading  
Atkins' Silver Steel Diamond X Cut  
Atkins' Special Steel Dexter X Cut  
Atkins' Special Steel Diamond X Cut  
Atkins' Champion and Electric Tooth  
Atkins' Hollow Back X Cut  
Atkins' Mulay, Mill and Drag  
Atkins' One-Man Saw, with handles  
Peace Circular and Mill  
Peace Hand Panel and Rip  
Peace Cross Cuts  
Richardson's Circular and Mill  
Richardson's X Cuts  
Richardson's Hand, &c.  
C. E. Jennings & Co., Hand, Panel  
and Rip  
Hack Saws—  
Griffin's, complete  
Griffin's Hack Saw, Blades  
Star Hack Saws and Blades  
Eureka and Crescent  
Scroll—  
Lester, complete, \$10.00  
Rogers, complete, \$4.00  
Barnes' Builders' and Cabinet Makers'  
Barnes' Scroll Saw Blades  
Saw Frames—See Frames, Saw.  
Saw Sets—See Sets, Saw.  
Saw Tools—See Tools, Saw.  
Scales—  
Hatch, Counter, No. 171, good quality,  
Hatch, Tea, No. 161,  
Union Platform, Flat  
Union Platform, Striped  
Chastillon's Grocers' Trip Scales  
Chastillon's Eureka  
Chastillon's Favorite  
Family, Turnbills  
Riehl Bros.' Platform  
Scale Beams—See Beams, Scale.  
Scissors, Fluting  
Scrapers—  
Adjustable Box Scraper (S. R. & L. Co.)  
Box, 1 Handle  
Box, 2 Handle  
Dallance Box and Ship  
Ship, Common  
Ship, R. I. Tool Co.  
Screen Window and Door  
Frames—See Frames.  
Screw Drivers—See Drivers, Screw.  
Screws—  
Bench and Hand—  
Bench, Iron  
Bench, Wood, Hickory  
Hand, Wood  
Lag, Blunt Point, list Jan. 1, 1890  
Coach and Lag, Blunt Point, list Jan.  
1, 1890  
Hand Nail, Sargent's  
Hand Nail, H. & P. Mfg. Co.  
Hand Nail, Am. Screw Co.  
Jack Screws, Millers Falls list  
Jack Screws, P. S. & W.  
Jack Screws, Sargent's  
Jack Screws, Stearns'  
Cork—  
Humason & Beckley Mfg. Co.  
Williamson's  
Howe Bros. & Hulbert  
Machine—  
Flat Head, Iron  
Round Head, Iron  
Wood—  
List January 1, 1891.  
Flat Head Iron  
Round Head Iron  
Flat Head Brass  
Round Head Brass  
Flat Head Bronze  
Round Head Bronze  
Rogers' Drive Screws  
Scroll Saws—See Saws, Scroll.  
Scythes.  
Grain  
Grass  
Scythe Snaths—See Snaths, Scythe.  
Sets.  
Axi and Tool.  
Alken's Sets, Axi and Tools  
Pray's Adj. Tool Hds., Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 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2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 209



Wire Brads & Nails, see Nails, Wire.  
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&105  
**Tapes, Measuring—**  
American.....40&40&55  
Spring.....405  
Chesterman's, Regular list.....25&305

**Thermometers—**

Tin Case.....80&30&105

**Thimble Skins—See Skins.****Ties, Bale—Steel**

Standard Wire, list.....50&10&55

**Tinners' Shears, &c.—See Shears, Tinners', &c.****Tinware—**

Stamped, Japanned and Piced, list Jan. 30 1887.....70&10&70&10&55

**Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.****Tools.****Coopers'—**

Bradley's.....205  
Barton's.....30&20&55  
L. & J. White.....30&55  
Albertson Mfg. Co.....305  
Beatty's.....305  
Sandusky Tool Co.....30&50&55  
Shaves, Cincinnati Tool Co.....305

**Lumber—**

Ring Peavies, "Blue Line".....\$20.00  
Ring Peavies, Common.....\$18.00  
Steel Socket Peavies.....\$21.00  
Mall. Iron Socket Peavies.....\$19.00  
Cant Hooks, "Blue Line".....\$14.00  
Cant Hooks, Common Finish.....\$14.00  
Cant Hooks, Mail. Socket Clasp, "Blue Line" Finish.....\$16.00  
Cant Hooks, Mail. Socket Clasp, Common Finish.....\$13.50  
Cant Hooks, Clip Clasp, "Blue Line" Finish.....\$14.00  
Cant Hooks, Clip Clasp, Common Finish.....\$12.00  
Hand Spikes.....\$5 ft., \$16.00; 8 ft., \$20.00  
Pike Poles, Pike & Hook, \$ dos., 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50  
Pike Poles, Pike only, \$ dos., 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$12.00; 18 ft., \$13.00; 20 ft., \$15.00  
Pike Poles, not ironed, \$ dos., 12 ft., \$9.00; 14 ft., \$10.00; 16 ft., \$11.00; 18 ft., \$12.00; 20 ft., \$13.00  
Setting Poles, \$ dos., 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00  
Swamp Hooks.....\$ dos \$18.00

**Saw.**

Atkins' Perfection.....\$ dos \$12.00  
Atkins' Excelsior.....\$ dos \$6.00  
Atkins' Giant.....\$ dos \$4.00

**Tobacco Cutters—See Cutters, Tobacco.****Transom Lifters—See Lifters, Transom.****Traps—****Game—**

Newhouse.....40&40&55  
Onida Pattern.....70&105  
Game, Blake's Patent.....40&10&55

**Mouse and Rat—**  
Mouse Wood Choker, \$ dosholes, 11&125  
Mouse, Round Wire.....\$ dos \$1.50, 105  
Mouse, Cage Wire.....\$ dos \$2.50, 105  
Mouse, Catch-em-alive.....\$ dos \$2.50, 155  
Mouse, Bonanza.....\$ dos \$2.50, 105  
Rat, Decoy.....\$ gr \$10.00, 105  
Ideal.....\$ gr \$10.00, 105  
Cyclone.....\$ gr \$5.25  
Hotchkiss Metallic Mouse, 5-hole traps, \$ dos., 90¢; in full cases, \$ dos.....75¢  
Hotchkiss Imp. Rat Killer.....\$ gro \$18.50  
Hotchkiss New Rat Killer.....\$ gro \$15.50  
Schuyler's Rat Killer.....\$ gro \$15.00

**Trimmers—**

Butter and cheese.....255

**Trimmers, Spoke.**

Bonney's.....\$ dos \$10.00, 505  
Stearns'.....\$ dos \$10.00, 20&105  
Ives', No. 1, \$15.00; No. 2, \$12.00 \$ dos.....55&105  
Douglas'.....\$ dos \$9.00, 205  
Cincinnati.....\$ dos \$9.00, 205

**Trowels—**

Lothrop's Brick and Plastering.....20&10&5&355  
Reed's Brick and Plastering.....155  
Dietson's Br'k and Plastering.....255  
Peace's Plastering.....255  
Clement & Maynard's.....205  
Rose's Brick.....15&205  
Brade's Brick.....255  
Worrall's Brick and Plastering.....205  
Garden.....705

**Trucks, Warehouse, &c.—**

R. & L. Block Co.'s list, '82.....405

**Tubes, Boiler—****See Pipe.****Twine—**

Flax Twine— BC. B.  
No. 1, 1/4 and 1/2 B Balls.....255 345  
No. 12, 1/4 and 1/2 B Balls.....255 335  
No. 18, 1/4 and 1/2 B Balls.....255 335  
No. 24, 1/4 and 1/2 B Balls.....255 335  
No. 30, 1/4 and 1/2 B Balls.....205 315  
No. 204, Matras, 1/4 and 1/2 B Balls.....55&545  
Chalk Line, Cotton, 1/4 B Balls.....255  
Mason Line, Linen, 1/4 B Balls.....555  
2-Ply Hemp, 1/4 and 1/2 B Balls (Spring Twine).....155  
3-Ply Hemp, 1/4 B Balls.....155  
3-Ply Hemp, 1/2 B Balls.....155  
Cotton Wrapping, 5 Balls to a.....155  
2, 3, 4 and 5-Ply Jute, 1/4 B Balls.....105  
Wool.....65&145  
Paper.....65&145  
Cotton Mops, 6, 9, 12 and 15 B to dos.....155

**Vises—**

Solid Box.....50&10&50&10&55  
Parallel—  
Fisher & Norris Double Screw.....15&105  
Stephens'.....25&305  
Parker's.....30&255  
Wilson's.....555  
Bonney's.....405  
Miller's Falls.....40&40&105  
Trenton.....40&50&105  
Merrill's.....15&205  
Sargent's.....50&10&105  
Backus and Union.....405  
Double Screw Leg.....15&105  
Prentiss.....30&255  
Simpson's Adjustable.....405  
Moore's.....305  
Massey Quick Action.....20 & 25 %  
Saw Vises—  
Bonney's, Nos. 2 & 3, \$15.00.....40&105  
Stearns'.....35&40&105  
Stearns' Silent Saw Vises.....35&355

Sargent's.....505  
Hopkins'.....\$ dos \$17.50, 105  
Reading.....40&105  
Wentworth.....30&105  
**Miscellaneous.**  
Combination Hand Vises.....\$ gr \$42.00  
Cowell Hand Vises.....205  
Bauer's Pipe Vises.....105  
Cincinnati.....25&105  
Enterprise Pipe Vises, each.....\$3.00  
Massey Combination Pipe.....40 %

**Wagon Boxes—See Boxes, Wagon.****Washer Cutters—See Cutters, Washer.****Wagon Jacks—See Jacks, Wagon.****Ware, Hollow, Enameled, &c.**

Cast Iron, Hollow—  
Stove Hollow-Ware—  
Ground.....60&105  
Unground.....60&10&105  
White Enameled-Ware—  
Maslin Kettles.....705  
Boilers and Saucepans.....40&10&50&55  
Tinned Boilers and S'pans.....40&10&50&55  
Rustless Hollow-Ware.....50&50&55  
Gray Enameled-Ware—  
Stove.....505  
Maslin Kettles.....60&10&105  
Boilers and Saucepans.....40&55  
Agate and Granite Ware, list Jan. 1, 1889.....33&405  
Ironclad Enameled Ware.....dis 33&405

**Kettles—**

Galvanized Tea-Kettles—

Inch.....6 7 8 9  
Each.....55¢ 60¢ 65¢ 75¢

**Standard Fiber—**

Wash-Basins, 10 1/2 in.....\$2.00  
Wash-Basins, 12 in.....2.25  
Keelers, 1 1/4 in.....4.00  
Cuspidors.....8.00  
Spittoons, "Daisy," 8 in.....4.00  
Pek Measure.....4.00  
Half-Pek Measure.....3.50  
See also Falls.

**Indurated Fiber—255**

Basins, Ringed, \$ dos., No. 2, \$4.30; No. 3.....\$4.30  
Washbasins, Nested, Nos. 0, 1, 2 and 3 (4 pieces), \$ nest.....\$7.50  
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), \$ nest.....\$9.70  
Butter Bowls, 16, 17 and 18-inch (pieces), \$ nest.....\$3.25  
Liquid Measures, pt., qt., 3 qt. and funnel (4 pieces), \$ set.....\$9.00  
Dry Measures, 1, 2, 4, 8 and 16 qts. (6 pieces), \$ set.....\$3.00  
See also Falls.

**Stove-Fitted, Hollow—**

4 mo. or 5 % cash in 30 days.

Reed & Barton.....  
Meriden Britannia Co.....40&55  
Simpson, Hall, Miller & Co.....  
Rogers & Brother.....  
Hartford Silver Plate Co.....40&5&255  
William Rogers Mfg. Co.....

**Washers—**

Size hole.....5-10 1/4 1/2 3/4 1 1/2  
Washers.....6 5 5.50 6 5  
In lots less than 200 B, \$ add 1/4, 5-B boxes 1¢ to list.

**Wedges—**

Iron.....\$ 2 1/4  
Steel.....\$ 3 1/4

**Weights, Sash—**

Solid Eyes.....\$ ton \$18&19

**Well Buckets, Galvanized—See Buckets, Well, Galvanized.****Wheels, Well.**

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.35

**Wire and Wire Goods—****Iron—**

Market,  
Br & Ann., Nos. 0 to 18.....75¢  
Cop'd, Nos. 0 to 18.....75¢  
Galv., Nos. 0 to 18.....85¢  
Tin'd, Tinned list Nos. 0 to 18.....85¢  
Stone,  
Br. and Ann'd, Nos. 16 to 18.....75¢  
Bright and Ann'd, Nos. 19 to 26.....77¢  
Br. and Ann'd, Nos. 27 to 36.....80¢  
Tinned,  
Tinned Broom Wire, 18 to 21, \$ B.....54¢  
Galvanized Fence, Nos. 8 and 9.....87¢  
Annealed Fence, Nos. 8 and 9.....77¢  
Annealed Grape, Nos. 10 to 18.....77¢  
Brass, list Jan. 18, 1884.....305  
Copper, list Jan. 18, 1884.....305  
Barb Fence.....See Trade Report  
Annealed Wire on Spools.....55¢  
Mallin's Steel and Tin'd on Spools.....55¢  
Mallin's Brass and Cop. on Spools.....45¢  
Tate's Spooled, Tinned and Annealed 55¢  
Tate's Spooled Cop. and Brass.....45¢  
Cast Steel Wire.....\$6.00 to \$8.30  
Stub's Steel Wire.....\$6.00 to \$8.30  
Steel Music Wire, 12 to 30.....\$60 to \$70  
Wire Clothes Lines, see Lines.  
Wire Picture Cord see cord.

**Bright Wire Goods—**

Standard list.....40&105

**Wire Cloth and Netting.**

Painted Screen Cloth, good quality, \$ 100 sq. ft., \$1.40

Galvanized Wire Netting.....70&10&755

**Wire Rope—See Rope, Wire.****Wrenches—**

American Adjustable.....405  
Baxter's Adjustable "B".....40&10&505  
Baxter's Diagonal.....40&10&505  
Coe's Genuine.....50&255  
Coe's "Mechanics".....50&10&255  
Girard Standard.....55&105  
Lamson & Sessions' Engineers'.....60&105  
Lamson & Sessions' Standard.....70&105  
P. S. & W. Agricultural.....75&5 & 75  
Girard Agricultural.....75&5 & 75  
Lamson & Sessions' Agric'l.....75&5 & 75  
Bemis & Call's  
Pat. Combination.....255  
Merrick's Pattern.....255  
Bridg's Pattern.....255  
Cylinder or Gas Pipe.....40&55  
No. 3 Pipe.....40&105  
Alken's Pocket (Bright).....\$6.00, 50&105  
The Favorite Pocket.....\$ dos \$4.00, 405  
Webster's Pat. Combination.....255  
Boardman's.....30&105  
Always Ready.....25&55  
Alligator.....505  
Donohue's Engineer.....30&105  
Acme, Bright.....50&255  
Acme, Nickle.....40&255  
Hercules.....705  
Walker's.....55&255  
Diamond Steel.....55&255  
Cincinnati Brace Wrenches.....25&105  
Taft's Vise Wrench.....55&10&255

**Wringers, Clothes—**

List September 20, 1890, 25¢ cash.

**Wrought Goods—**

Staples, Hooks, &c., list Jan. 12, 1886. 55&55&105

# PAINTS, OILS AND COLORS.—Wholesale Prices.

**Animal and Vegetable Oils.**

Lined, City, raw, per gal. 57 @ 62  
Lined, City, boiled.....60 @ 65  
Lined, Western, raw.....55 @ 55  
Lard, City, Extra Winter.....57 1/2 @  
Lard, City, Prime.....55 @ 55  
Lard, City, Extra No. 1.....45 @ 47 1/2  
Lard, City, No. 1.....40 @ 42 1/2  
Lard, Western, prime.....45 @ 45  
Cotton-seed, Crude, prime.....32 @ 33  
Cotton-seed, Crude, off grades.....25 @ 30  
Cotton-seed, Summer Yellow, prime.....40 @ 41  
Cotton-seed, Summer Yellow, off grades.....32 @ 38  
Sperm, Crude.....72 @ 73  
Sperm, Natural Spring.....72 @ 73  
Sperm, Bleached Spring.....78 @ 75  
Sperm, Natural Winter.....78 @ 75  
Sperm, Bleached Winter.....78 @ 80  
Whale, Crude.....54 @ 56  
Whale, Natural Winter.....54 @ 56  
Whale, Bleached Winter.....56 @ 58  
Whale, Extra Bleached.....58 @ 60  
Sea Elephant, Bleached Winter.....63 @ 64  
Menhaden, Crude, Sound.....25 @ 27  
Menhaden, Crude, Southern.....29 @ 30  
Menhaden, Light Pressed.....31 @ 32  
Menhaden, Bleached W'ter.....31 @ 32  
Menhaden, Extra Bleached.....33 @ 35  
Tallow, City, prime.....44 @ 44  
Tallow, Western, prime.....44 @ 44  
Cocoanut, Ceylon.....63 @ 7  
Cocoanut, Cochiti.....45 @ 45  
Cod, Domestic.....45 @ 45  
Cod, Foreign.....45 @ 45  
Red Elaine.....36 @ 38  
Red Saponified.....44 @ 44  
Bank.....27 @ 28  
Straits.....28 @ 29  
Olive, Italian, bbls.....73 @ 75  
Nealfoot, prime.....65 @ 65  
Palm, prime, Lard.....6 @ 6 1/2

**Mineral Oils.**

Black, 20 gravity, 25 @ 30  
cold test.....per gal 7 1/2 @ 8  
Black, 20 gravity, 15 cold test.....8 1/2 @ 9  
Black, 20 gravity, summer, cold test.....8 1/2 @ 7  
Cylinder light, altered.....15 @ 20

Cylinder, dark, altered.....12 @ 15  
Cylinder, dard, st'm refined.....10 @ 18  
Paraffine, 23 1/2 @ 24 gravity.....13 1/2 @ 14  
Paraffine, 25 gravity.....12 1/2 @ 18  
Paraffine, 28 gravity.....9 1/2 @ 10  
Paraffine, red, 21 @ 22 grty.....15 @ 14  
Paraffine, red, 23 1/2 @ 23 grty.....15 @ 14

**Paints and Colors.**

Barytes, Foreign, \$ ton \$22.00 @ 24.00  
Barytes, Amer. floated.....30.00 @ 32.00  
Barytes, Amer. No. 1.....19.00 @ 20.00  
Barytes, Amer. No. 2.....13.00 @ 16.00  
Barytes, Amer. No. 3.....11.00 @ 12.00  
Blue, Celestial.....\$ B 6 @ 8  
Blue, Chinese.....50 @ 55  
Blue, Prussian.....25 @ 40  
Blue, Ultramarine.....8 @ 25  
Brown, Spanish.....1 1/2 @ 1  
Brown, Vandyke, Amer.....3 @ 3 1/2  
Brown, Vandyke, English.....6 @ 8  
Carmine, No. 40, in bulk, 3.10 @  
Carmine, No. 40, in boxes or barrels.....3.20 @  
Carmine, No. 40, in ounce bottles.....4.20 @  
Chalk, in bulk.....\$ ton, 2.75 @ 3.00  
Chalk, in bbls., \$ 100 B.....83 @ 40  
China Clay, English.....\$ ton, 13.00 @ 15.00  
Cobalt Oxide, prep'd.....2.00 @  
Cobalt Oxide, black.....lots 100 B, 2.00 @  
Cobalt, Oxide, black.....lots 100 B, 2.05 @  
Green, Paris, in bulk.....14 @ 15 1/2  
Green, Paris, 170 @ 175 B.....14 @ 15 1/2  
Kegs, Paris, small pack.....16 @ 21 1/2  
Green, Chrome, ordinary.....8 @ 11  
Green, Chrome, pure.....22 @ 30  
Lead, Eng., B.B. white.....8 1/2 @ 10  
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 B.....\$ 7 1/2 @  
Kegs, lots 1000 B to 5 tons.....\$ 6 @  
Kegs, lots 5 tons to 12 tons.....\$ 6 @  
Kegs, lots 12 tons and over.....\$ 6 @  
Lead White in oil, 25 B tin pails add to keg price.....\$ 1/4

Lead, White, in oil, 12 1/2 B tin pails, add to keg price.....\$ 1  
Lead, White, in oil, 1 to 5 B assorted tins, add to keg price.....\$ 2 1/2  
Lead, Red, bbls. and 1/4 bbls.....6 1/4 @ 7  
Lead, Red, kegs.....6 1/4 @ 7 1/2  
Litharge, kegs.....6 1/4 @ 7 1/2  
Litharge, bbls. and 1/4 bbls.....6 1/4 @ 7  
**TERMS.**—Cash and Litharge.—On lots of 1000 B or over, 60 days' time or 2 1/2 % discount for cash if paid within 15 days of date of invoice.  
Ocher, Rochelle.....1.35 @ 1 1/2  
Ocher, French Washed.....1 1/2 @ 2 1/2  
Ocher, German Washed.....1 1/2 @ 3  
Ocher, American.....1 1/2 @ 1 1/2  
Orange Mineral, English.....9 @ 9 1/2  
Orange Mineral, French.....10 @ 10 1/2  
Orange Mineral, German.....9 1/2 @ 10  
Orange Mineral, American.....8 @ 8 1/2  
Paris White, English Cliff-stone.....1.00 @ 1.15  
Paris White, American.....70 @ 75  
Putty, wooden pails......01 1/2 @  
tin pails......02 @ .02 1/2  
bladders......02 @ .02 1/2  
Red, Indian, English.....6 1/4 @ 7  
Red, Indian, American.....2 @ 6 1/2  
Red, Tuscan.....9 @ 14  
Red, Venetian, American.....9 @ 11  
Red, Venetian, English.....\$ 100 B, 1.00 @ 1.25  
Sienna, Italian, Burnt and Fowd.....\$ 5 @ 6 1/2  
Sienna, Ital., Raw.....1 1/2 @ 3 1/2  
Sienna, Ital., Raw, Fowd.....5 @ 6 1/2  
Sienna, Ital., Raw Lumps.....2 @ 3 1/2  
Sienna, American, Raw.....1 1/2 @ 1 1/2  
Sienna, American, Burnt and Powdered.....1 1/2 @ 1 1/2  
Talc, French.....1 1/2 @ 1 1/2  
Talc, American.....1 1/2 @ 1 1/2  
Terra Alba, F'ch, \$ 100 B.....90 @ 1.00  
Terra Alba, English.....50 @ 60  
Terra Alba, American No. 1.....70 @ 75  
Terra Alba, American No. 2.....40 @ 50  
Umber, Turkey, Bnt. and Fowd.....3 1/2 @ 4  
Umber, Turkey, Bnt. and Fowd.....2 1/2 @ 3  
Umber, Turkey, R'w Lmps.....2 1/2 @ 2 1/2  
Umber, Turkey, Bnt. Amer.....1 1/2 @ 1 1/2  
Umber, Turkey, R'w Amer.....1 1/2 @ 1 1/2  
Yellow, Chrome.....10 @ 25  
Vermilion Americ. Lead.....11 1/2 @ 17

Vermilion, Quicks'er, bulk.....64 @ 66  
Vermilion, Quicks'er, bags.....65 @ 67  
Vermilion, Quicksilver, smaller pkgs.....60 @ 71  
Vermilion, English Import.....80 @ 85  
Vermilion, Imitation, Eng.....8 @ 25  
Vermilion, Trieste.....87 1/2 @ 90  
Vermilion, Chinese.....90 @ 96  
Whiting, Common, \$ 100 B.....40 @ 45  
Whiting, Gliders.....50 @ 55  
Zinc, American, dry.....4 1/2 @ 5  
Zinc, French, Red Seal.....8 @ 8 1/2  
Zinc, French, Green Seal.....8 @ 8 1/2  
Zinc, French, V. M. X.....7 @ 7  
Zinc, Antwerp, Red Seal.....7 1/2 @ 7 1/2  
Zinc, Antwerp, Green Seal.....8 @ 8 1/2  
Zinc, German, L. Z. O.....8 @ 8 1/2  
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....10 1/2 @ 11 1/2  
lots less than 1 ton.....11 @ 11 1/2  
Zinc, V. M. in Poppy Oil, Red Seal.....10 @ 10 1/2  
lots of 1 ton and over.....10 @ 10 1/2  
lots less than 1 ton.....10 1/2 @ 10 1/2  
Discounts.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1 1/2 %; 25 bbls, 2 1/2 %; 50 bbls, 4 %. No discount allowed on less than bbl. lots.

**Colors in Oil.**

Blue, Chinese.....\$ B 35 @ 40  
Blue, Prussian.....20 @ 25  
Blue, Ultramarine.....12 @ 13  
Brown, Vandyke.....7 @ 12  
Green, Chrome.....8 @ 13  
Green, Paris.....16 @ 18 1/2  
Sienna, Raw.....7 @ 14  
Sienna, Burnt.....7 @ 14  
Umber, Raw.....7 @ 10  
Umber, Burnt.....7 @ 10

**Spirits Turpentine.**

In regular bbls.....39 @  
In machine bbls.....39 @

**Glue.**

Low Grade.....\$ B 8 @ 10  
Cabinet.....12 @ 14  
Medium White.....13 @ 15  
Extra White.....17 @ 20  
French.....10 @ 22  
English.....12 @ 13  
Irish.....12 @

